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The

ILLINOIS

Medical Journal

VOL. 81 NO.

April, 1942

In This Issue

The Kenny Treatment of Infantile Paralysis During the Acute Stage

Preliminary Program

for the Annual Meeting
Illinois State Medical Society
Springfield, May 19, 20, 21, 1942

(See page 25 for Table of Contents)

OFFICIAL PUBLICATION OF THE ILLINOIS STATE MEDICAL SOCIETY

Ragged "old Bob" Gottadime,
Relic of a better time,
Walks the streets and begs a loan
In a quiet dulcet tone,
"Pardon me when you I dun,
My doctor says I need B-1".

RICH MAN, POOR MAN, ***Beggar Man,*** THIEF,
and others, too, may require additional Vitamin B_1 daily.

*Wyeth's** BEWON* ELIXIR

"CLINICAL EVALUATION of the American dietary indicates that large groups of our population live on diets on the borderline of adequacy of Vitamin B_1."[1]

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Wyeth's Bewon Elixir is a palatable elixir containing 500 International Units of Vitamin B_1 in each fluid ounce. It is available in pint and gallon bottles.

[1]Reimann, H. A.: Treatment in General Medicine, 1941 Prog. Vol. Phila., F. A. Davis Co., 1941
*Reg. U. S. Pat. Off.

JOHN WYETH & BROTHER, INC., PHILADELPHIA

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The Illinois Medical Journal

April, 1942

VOL. 81, NO. 4

Official Journal of the Illinois State Medical Society

EDITOR — Harold M. Camp. EDITORIAL BOARD — James H. Hutton, Chairman, Frederick H. Falls, Josiah J. Moore, Edwin M. Miller, Chauncey C. Maher, Harry S. Gradle, Philip H. Kreuscher, Harry Culver.

Editorials

THE 1942 ANNUAL MEETING

The 1942 annual meeting of the Illinois State Medical Society will be held in Springfield on May 19, 20, 21, and the preliminary program for the various sections, the general and joint sessions, along with other information relative to the meeting, will be found in this issue of the Journal.

Owing to the fact that the meetings have grown each year it has been quite difficult to make the necessary arrangements for this meeting, and it is necessary to use at least two buildings which are close together, for the various sessions. The technical exhibits and all general meetings will be held in the Knights of Columbus Building, while the scientific exhibits and part of the section meetings will be scheduled for the Elks Club.

There has been an increasing tendency in recent years to have more general and joint sessions at the annual meetings, and this will be continued this year, as will be noted in the preliminary program.

Arrangements for the 1942 meeting have been rather difficult to make as several members who have been accepted to participate in the programs have been called to service. Likewise several of those responsible for arranging the individual section programs are now in some form of military service, and it has been necessary to make replacements in order that the program might be completed.

There will be a number of invited guests on the program this year, as will be noted. Papers will be presented on subjects which are most timely, having to do with military medicine, civilian defense, and other equally important subjects. The official program will be published in the May Illinois Medical Journal, and other essential information will be added at that time.

Physicians planning to attend the meeting in Springfield should make their hotel reservations early so there will be no last minute disappointments. The hotels, the Springfield Association of Commerce and many other local groups are cooperating with the Committee on Arrangements and the Host Society, in the common endeavor to do all that is possible to insure a most successful annual meeting for 1942.

PHYSICIANS FOR THE ARMED FORCES

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians has assumed responsibility for procuring the necessary members of these professions for the Army, Navy, U. S. Public Health Service and other Federal Services now requiring medical personnel. Thousands of physicians are now in all branches of service and many additional thousands are being needed constantly.

It is the desire of the Procurement and Assignment Service to create a pool of qualified physicians who are not only qualified to render service in the various governmental fields but who can be safely dislocated from their private

practice without inflicting any unusual hardship on their respective communities. Then when any Governmental agency such as the Army, Navy, Public Health Service, etc., desires a certain number of qualified physicians for special service on short notice, it will be easy to supply them.

The function of the Procurement and Assignment Service at State and County levels is to determine the availability of those physicians submitted to them for clearance. Primarily the object is not to evade military service but to determine those who are available for the various types of service for which there is an urgent demand.

In determining availability for service it is quite important that careful consideration be given to the following:

1. Can a young man in practice be replaced temporarily by another physician beyond the draft age for the emergency?

2. In the event that a physician is engaged in industrial practice, or a member of a clinic group, would it be possible for others to assume his responsibilities while he is in service?

3. Where the physician in question is the only practitioner in a small community, consideration should be given to the availability of other physicians in the vicinity who might be able to serve the community during the absence of the resident.

A considerable amount of responsibility is placed in the hands of the State and County Committees which are urged to give careful consideration to each case referred to them for clearance and to be sure that the physician in question is available or non-available according to the principles which are mentioned above.

Copies of these clearance reports are sent to Washington as well as to the Corps Area Chairman. The final decision is made by the Procurement and Assignment Service officials in Washington.

Each County Committee should endeavor to get all possible information relative to physicians whose names are submitted to them for clearance so that the Procurement and Assign-

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Outside of editorial or allied views or statements that are the authoritative actions of the Illinois State Medical Society, the organization denies responsibility for opinions and statements published in the ILLINOIS MEDICAL JOURNAL. Views expressed by the various authors and views set forth in various departments in the JOURNAL represent the views of the writers.

State Society will pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

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ment Service will have definite reasons for the recommendations which are made in each case.

Charles H. Phifer, M.D.
Chairman,
Procurement and Assignment Service
6th Corps Area
30 North Michigan Avenue
Chicago

PREPARATION OF PAPERS FOR PUBLICATION

In our efforts to improve the Journal we are faced with problems for the solution of which we ask the contributors' aid. Due to rising prices in general and to the increased cost of paper in particular, Journal costs are increasing. Space for scientific articles has been somewhat reduced by the creation of new departments made necessary by the war. For these and other reasons, we are submitting a list of suggestions to authors. If these are carefully followed, papers will decrease in length and increase in effectiveness.

Scientific articles should not exceed ten Journal pages and will be more carefully read if they are shorter than that.

Papers must be typewritten on one side only of white paper 8½ x 11 inches, double spaced throughout. The margins should be 1½ inches top and left side, 1 inch bottom and right side.

The pages, including tables, legends and bibliography, should be numbered consecutively.

The title should be brief and typed in capital letters. Under the title should appear the name of the author and the city in which he lives. His street address should appear at the end of the article.

There should appear in the text reference numbers typed above and to the right of the word to which there is a reference. The bibliography should be collected at the end of the article with the same reference numbers. The list should include the following items:

Books — author's surname followed by initials; title of book; edition; location and name of publisher; year of publication; volume; and page number. Thus, Osler, W.: Modern Medicine, ed. 3, Philadelphia, Lea & Febiger, 1927, vol. 5, p. 57.

Periodicals — author's surname followed by initials; name of periodical, volume, page, month (day if necessary,) year of publication. Thus, Leahy, Leon J.: New York State J. Med. 40: 347 (March 1) 1940.

Spelling should be correct. When in doubt consult a standard dictionary. The Journal has not adopted the short form of through, thorough, etc.

Phony locutions. "He operated ten cases." The surgeon operates in a case but on a patient. The patient is not the case. The patient dies or recovers, the case terminates fatally or ends in recovery. "Cases in whom" should be "cases in which." "Patient in whom" is correct.

Many physicians have envied Sir William Osler his apparently easy command of English writing. In the Osler Library is a collection of some of his manuscripts showing the various stages of preparation. First there are notes of various kinds, then a rough outline in longhand, next a typewritten copy with interlineations, transpositions and deletions, a second typewritten copy also showing much modification, and finally a third typewritten copy, probably used by the printer. Even this third copy bears minor corrections.

Illustrations. All cuts required for illustrations are furnished at the author's expense. For detailed instructions regarding photographs, drawings cost, etc., apply direct to the editor.

The Editor and the Editorial Board.

REPORT OF EDUCATIONAL COMMITTEE

December, 1941, and January, February, 1942

The office of the Educational Committee has not only served as a clearing house between medicine and the public, but has also given very definite assistance during the last months to other Committees and officers of the Illinois State Medical Society. The following definite contribution might be mentioned.

Industrial Committee: Letters sent to a selected list of 80 doctors in the state inviting them to participate in programs on industrial medicine and surgery. A second follow-up letter was sent to about 40. The names and subjects submitted have been listed and will go with a letter from the Chairman of the Indus-

trial Committee to officers of county medical societies.

Scientific Exhibits Committee for Annual Meeting: 150 letters sent to prospective exhibitors with application blanks properly filled in.

Secretary: 27 Letters re Public Assistant Recipients mimeographed. 200 Copies of an article by Major Seeley mimeographed. 57 News releases concerning the National Conference on Medical Service.

President: 126 News releases concerning Procurement and Assignment meeting at Museum of Science and Industry. Stenographic service given.

Journal: Letters written, Proofs returned to authors, Journals sent to advertisers.

"LEAVE 'EM WHERE THEY LIE" Articles:

The Committee has received numerous requests from doctors for sets of these articles to be used in connection with First Aid and Civilian Defense training in their plants. One company asked for 125 copies to be used by men in its plant.

The *Daily Republican* of Belvidere for November 29th, carried the following editorial:

> "The Illinois Medical Society is doing a good work in its series of news releases emphasizing the slogan, 'Leave 'Em Where They Lie,' referring to victims of automobile accidents. If the general public will remember these facts and follow them at all times, the traffic toll will be reduced by a wide margin. The medical group is to be congratulated for its aid to the cause of greater safety."

The Texas State Medical Society has been thanked for allowing the Educational Committee to use these articles and many requests for use by city and medical societies in all sections of the country have been referred to Texas.

PACKAGE LIBRARIES:

At the present time the pubilc is extremely interested in material relating to nutrition and blood plasma and blood transfusions. Many package libraries have been prepared and sent not only to doctors but to laymen.

Package libraries also have been loaned on Mental Health, Child Health, Important Discoveries of 1941, Medical Education, Public Health, Maternal Welfare, Child Health, Nursing, Eye Conservation, Pneumonia, Sulfanilamide, Athletics and Health, Alcohol and Health, Leisure and Recreation, Common Cold, Health and Sanitation.

SPEAKERS BUREAU:

64 Doctors were scheduled to address lay audiences. In fact, the following organizations requested programs on health:

- High School assemblies and vocational guidance groups
- Women's Clubs
- Business and Professional Women's Clubs
- Lions
- Parent Teacher Associations
- Health Chairmen, Illinois Federation of Women's Clubs
- Women's Auxiliaries
- District Meetings, Illinois Federation of Women's Clubs
- Mothers' Clubs
- Y.W.C.A.s
- Eastern Star Orders
- Household Science groups
- Home Bureaus.

Programs were arranged for groups in Chicago, Evanston, Brookfield, Winnetka, Western Springs, Crete, Sycamore, Chicago Heights, Tremont, Summit, Geneseo, Riverdale, Berwyn, Oak Forest, Franklin Park, Perry, Peru, Kewanee, Galesburg.

Subjects selected by these groups were interesting and varied:

Sex Hygiene	Vitamins
Heart Disease	Mental Health
New Trends in Medicine	Sanitation
Opportunities in Medicine	Nutrition
Allergy	Skin
Middle Age	Health School Child
Cancer	Medicine & Defense
Health of the Young Mother	Eye, Ear, Nose & Throat
	Abuses of Self Medication
First Aid in the Home	Colds
Prevention of Tuberculosis	Socialized Medicine
Blood Banks	

SCIENTIFIC SERVICE:

45 Scientific programs were arranged for 25 county medical societies as follows:

Bureau — Management of Prolonged Labor
Effingham — Lower Back Pain
Tazewell — Chronic Rheumatic Disease
Bond — Office Urology

Lee — Low Back Pain
Knox — Water Balance
Randolph — Healing of Wounds
Randolph — Meniere's Disease
Montgomery — Ankle Fractures
Champaign — Gall Bladder Disease
Fulton — Prevention of Blindness
Fulton — Cancer
Bureau — Obstetric Hemorrhage
St. Clair — Hernia
Union — Infections of the Hand
McDonough — What the General Practitioner Should Know About the Eyes
Jersey-Greene — Dermatology
Effingham — Acute Abdomen
Bureau — Injuries of the Nervous System
Lee — Gall Bladder Surgery
Will-Grundy — X-Ray in Diagnosis of Gallbladder & Liver Conditions
Will-Grundy — Rheumatic Heart Disease
DeKalb — Diseases of the Gall Bladder
Bureau — Obstetric Hemorrhage
Bureau — Toxemias of Pregnancy
McDonough — Aviation Medicine
Peoria — Backache and Sciatica
Vermilion — Sex Hormones
Perry — Medical Management Diseases of the Stomach
Perry — Surgical Management Diseases of the Stomach
Union — Fractures of the Pelvis
Will-Grundy — Bladder Tumors
Jersey-Greene — Disorders of the Gastrointestinal Tract
Knox — Varicosities
Knox — Pneumonia in Infancy
Marion — Nose & Throat Conditions
Will-Grundy — The Thyroid
LaSalle — Poliomyelitis, Medical Management
LaSalle — Orthopedic Management of Poliomyelitis
Henry — Sinus Disease
McLean — Pre-Eclamptic Toxemia
Henry — Empyema and Lung Abscess
Saline — Age of Speed Versus Age of Accidents
Will-Grundy — Peptic Ulcer

RADIO:

19 Programs were given over WJJD and WAAF with Mrs. S. C. Kehl assisting through the month of January over the latter station. Two highly interesting broadcasts were given on February 21st and February 28th when Doctors Frank L. Brown and F. O. Fredrickson talked on "The Medical Profession and the War" and Doctors F. P. Hammond, E. H. Ochsner and Captain Gorby spoke on "The Chicago Medical Society and the Chicago Crime Commission."

POST-GRADUATE EDUCATION:

At long last the Committee completed the assemblying and mimeographing of scientific papers presented at the Post-Graduate Conferences sponsored during the fall and winter of 1941. This material was bound and mailed to all doctors requesting copies.

A very unusual conference has been arranged for Belleville on April 9th by the Post-Graduate Committees of the Illinois and Missouri State Medical Societies. A copy of the program attached.

MISCELLANEOUS: *Parent Teacher Association*: The Secretary of the Educational Committee has been invited to serve on the Advisory Committee to the Summer Round-Up Committee of the Illinois Congress of Parents and Teachers.

The Committee assisted the Summer Round-Up Chairman with plans for an annual conference of chairmen which was held at the Stevens Hotel in January. The Committee furnished several hundred "Do You Know" articles on appropriate subjects for distribution at this meeting.

Letters have gone to officers of county medical societies explaining the purpose of the Summer Round-Up and stating that local groups will contact them for advice. Letters have also gone to all Summer Round-Up chairmen throughout the state advising them to contact the officers of the county medical societies before making plans for this activity in their communities.

Periodic Health Examination Blanks: Requests have come in from Public Health Nurses and Advisers of County Home Bureaus for the Periodic Health Examination Blanks.

PRESS SERVICE:

30,000 "Do You Know" articles sent to the lay list which includes health chairmen, farm and home advisers, nurses, schools, libraries, teachers, etc.

6 Stencils of 6 different "Do You Know" were furnished the Principal of the Trumbull School who had 1,000 copies of each run off so that each child in the school could take a copy home.

Articles were written on the following subjects:

Open Those Garage Doors	Speech Defects
The Weather and You	Your Blood Count and What It Means
Mumps	Heart Trouble
Looking Backward	Avoid Permanent Blackouts
Do Not Delay in Pneumonia	Tuberculosis Comes from Tuberculosis
Prevalence of Measles	
Colds	

3,276 Editorial Style articles released to newspapers, 208 Health columns to newspapers, 64 Special releases for Chicago Medical Society meeting.

PUBLICITY FOR COUNTY MEDICAL SOCIETY MEETINGS:

90 — Releases for Effingham County
54 — Releases for Lee
76 — Releases for Knox
13 — Releases for Randolph
91 — Releases for Bureau
131 — Releases for Bureau Maternal Welfare Meetings
36 — Releases for DeKalb
12 — Releases for North Shore Branch Chicago Med. Society
95 — Releases for LaSalle
27 — Releases for Perry
17 — Releases for Jersey-Greene
41 — Releases for Henry

AID TO COUNTY SOCIETIES:

318 — Notices for Effingham County
269 — Notices for Lee County
296 — Notices for Knox County
45 — Notices for Randolph
552 — Notices for Bureau
180 — Schedules for Maternal Welfare Programs for Bureau Co.
82 — Notices for DeKalb County
432 — Notices for LaSalle County
221 — Notices for Perry
45 — Notices for Jersey-Greene
207 — Notices for Henry County

CONCLUSION:

The office of the Committee has attempted to tell the public of the contribution being made by physicians of the State to the present emergency. The mother of a boy who is in the army heard one of the Illinois State Medical Society speakers on "Medicine and Defense" and she telephoned to say that she wished every mother of a soldier could hear that same talk.

This program will continue through speakers before lay groups, through the newspaper, over the radio, and by the distribution of the "Do You Know Column" to important laymen in all sections of the State.

Respectfully submitted,
Jean McArthur, Secy.,
Educational Committee

WE MUST DO EVEN MORE

The Japanese onslaught on Pearl Harbour, the Philippines, Malaya, and Java, the Nazi attacks on our east coast merchant ships have brought America face to face with the reality of war — war that encircles the globe. We know that this is our war, one which demands all-out effort in service, materials, machines and money.

We as physicians and surgeons, are well aware of the importance of medical service in the nation's all-out fight for freedom. We have already shown our willingness to serve on foreign and home battlefronts in the care of both armed and civilian forces. This is our professional job. But we must do even more.

As Americans, we must help provide the money to expand the war program to the maximum of our resources. Tax dollars are not enough. Loans to the Government from banks do not make up the deficit. We as individuals must lend our dollars to the government through the purchase of war securities—THE UNITED STATES SAVINGS BONDS.

The dollars invested in United States Savings Bonds buy planes, tanks, ships and guns. The buying of securities reduces our own purchasing power for material goods and thereby serves as a check upon runaway prices and inflation. For us as individuals, the bonds represent savings which grow in value. The Bonds may be redeemed by an owner any time after sixty days from the date of issue. Hence, we can draw upon these financial reserves in case of need.

Freedom Bonds, Victory Bonds — we must buy and continue to buy these war securities. We must put our dollars into the front line battle in America's fight for freedom.

For Security — there is no better investment than Defense Savings Bonds. You may start by buying a 10-cent Defense Stamp today.

Correspondence

PREPARATION OF HUMAN PLASMA

ROLAND R. CROSS, M.D.,
Illinois Director of Public Health
SPRINGFIELD

There is a widespread interest at the present time in the preparation of human plasma for transfusion. A nationwide program has been instituted through the American Red Cross for the collection of blood for this purpose, for the Army and Navy. Because of the recognized value of human plasma in traumatic conditions accompanying disasters, many inquiries have come from various sections of the State, with reference to preparing plasma locally for Civilian Defense and other purposes.

Although, on the surface, the preparation of plasma may appear to be a rather simple procedure, a very careful and detailed technique has been established by the National Institute of health (which controls all biologics distributed nationally in interstate commerce). This technique takes into consideration various dangers and hazards which may be encountered in the preparation of plasma by workers unskilled in this particular type of laboratory technique. Whereas plasma which is properly prepared is almost completely innocuous and extremely beneficial for the indicated conditions, improperly prepared plasma, without the necessary safeguards, can be very dangerous. Some of the safeguards and precautions, which must be observed in order to prepare a final product which is innocuous, include:

1. Drawing the blood, under suitable circumstances, into a suitable container.
2. Maintaining the citrated blood at suitable temperatures and removing the plasma as rapidly as possible.
3. Performing sterility tests.
4. Pooling the plasma.
5. Adding the proper preservative, and bottling the plasma into final containers in a closed system.
6. Performing both sterility and safety tests on the final containers, to ensure a safe final product.

All the handling of plasma should preferably be performed in a "sterile" or dustfree room.

Whereas the experience of many years has taught most hospitals that the preparation of intravenous solutions is attended by so many difficulties that they no longer attempt to prepare these products themselves, these same hospitals appear to have been presuaded that the preparation of plasma is a relatively simple matter. This is a fallacious point of view, because plasma is a biologic, and many years' experience in the preparation of biologics has demonstrated the need for the most scrupulous technique in the handling of serums, far more rigorous than that required in the preparation of intravenous solutions.

It is not the intention of the Department to discourage the local production of plasma when it can be done safely and economically. However, it is urged that the rules laid down by the National Institute of Health be followed in all establishments doing work of this nature, thereby protecting not only the patient, but also the establishment which engages in the preparation of plasma.

A more detailed presentation of the accepted technique for handling blood and preparing plasma will appear in an early issue of this *Journal*. The above is a broad outline of the fundamentals of proper technique.

WOMAN'S AUXILIARY NOTES

The Woman's Auxiliary to the Chicago Medical Society held its March meeting at Marshall Field & Company's English Tea Room. Dr. John S. Nagel, chairman of the State Benevolence Fund was the guest speaker.

The Woman's Auxiliary to the Peoria City Medical Society held its February meeting at the *University Club*. Mrs. Allan Foster, chairman of the legislative committee presented the speaker Dr. Harry A. Durkin, who spoke on "Public Health Problems."

Dr. Durkin stated in opening that one of the *surest ways to appraise the IQ* of a city is by its health and educational ideals. He then spoke of the five man board of public health. This board operating on a non-political basis is comprised of three laymen and two doctors all of whom *serve without compensation. The board has control* of all expenditure pertaining to Peoria's public health and is authorized to appoint the health commissioner, as well as every employee connected with the public health service in any capacity.

Besides the auxiliary members thirty representatives from the Council of Social Agencies attended the meeting.

The Women's Auxiliary to Vermilion County Medical Society held the February meeting at the Lincoln Hotel. Mrs. J. C. Moore, Hoopeston, president presided during the annual business session. Reports of various committees were given.

Mrs. C. L. Bennett, Hygeia Chairman reported 87 subscriptions in the organization as having been placed in the schools, waiting rooms, railroad stations, and other public places during the year.

Mrs. Charles W. Stigman
Press & Publicity

Mrs. Harry Otten, President

CHILD HEALTH DAY — 1942

By the President of the United States of America
A Proclamation

WHEREAS the Congress by joint resolution of May 18, 1928 (45 Stat. 617), has authorized and requested the President of the United States to issue annually a proclamation setting apart *May 1 as Child Health Day*:

NOW, THEREFORE, I, FRANKLIN D. ROOSEVELT, President of the United States of America, *in recognition of the vital importance* of the health of children to the strength *of the Nation, do hereby designate the* first day of May of this year as Child Health Day.

And I call upon the people in each of our communities to contribute to the conservation of child health and the reduction of illness among *children by exerting every effort to the end* that before May Day, Child Health Day, children over nine months of age be immunized against diphtheria and smallpox, the two diseases for which we have the surest means of prevention.

IN WITNESS WHEREOF I have hereunto set my hand and caused the seal of the United States of America to be affixed.

DONE at the City of Washington this 6th day of February in the year of our Lord nineteen hundred and forty-two and of the Independence of the United States of America the one hundred and sixty-sixth.

Franklin D. Roosevelt

EXAMINATIONS

American Board of Obstetrics and Gynecology

The general oral and pathological examinations (Part II) for candidates (Groups A and B) will be conducted at Atlantic City, N. J., by the entire Board, from Thursday, June 4, through Tuesday, June 9, 1942, prior to the opening of the annual meeting of the American Medical Association.

Group A, Part II, candidates will be scheduled for examination the first part of the examination period, and Group B, Part II, the latter half. Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

Candidates for *reexamination* in Part II must make written application to the Secretary's Office before April 15, 1942.

As previously announced in the Board booklet, this fiscal year (1941-1942) of the Board marks the close of the two groups of classification of applicants for examination. Thereafter,

the Board will have only one classification of candidates, and all will be required to take the Part I and Part II examinations.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

Paul Titus
Secretary

WITH YOUR HELP WE SHALL BE VICTORIOUS IN OUR FIGHT AGAINST CANCER

Managing Director of the American Society for the Control of Cancer
C. C. LITTLE, ScD.

The real existence of the greatest national emergency in our history is now recognized by every intelligent American citizen. Along with the vast demands made upon our courage and patience by this situation is a keener realization of our responsibilities to care for the lives and happiness of those unfortunate people who find themselves in personal physical adversity.

The greatest of all these menaces to the health, happiness and life of our people is cancer. The quality of its threat and of its power as a killer is unique. War itself may take a larger toll of Americans in the years to come. Various heart conditions of cardiac disease may do the same thing. Neither, however, will so silently, so grimly, and with such evil power to disintegrate moral stamina, invade the lives and families of our people. We must not lose sight of this fact. No matter what our emergency obligations may be, we must not forget this great continuing enemy of mankind.

Fear, ignorance, and delay are the three allies of cancer which lead to disaster and death. They can be overcome by knowledge of the early signs and symptoms of the disease and of the methods of fighting it. The American Society for the Control of Cancer throughout the country has for years been engaged in this battle. It is making progress. It must not lose the gains made, and indeed must drive ahead. The defeat of fear, ignorance, and delay lies in the adoption of an intelligent and controlled point of view by each individual. These same qualities will contribute to his or her success in fighting whatever the national emergency may present.

The fight against cancer is an ally in the fight against our foreign enemies. The methods are much the same. The qualities appealed to in the individual are similar. The complete victory spoken of by the President in discussing the international situation is just as applicable to our fight against cancer. Both victories can be gained. We must recognize how closely they may be related to one another and must act speedily, courageously, and untiringly to make both possible.

HANDICAPPED CHILD MUST LEARN TO LIVE IN NORMAL SOCIETY

The hadicapped child must learn to live in a normal society as most of his activities will be with normal people, Ruth Beckey, Ph.D., Columbus, Ohio, points out in *Hygeia, The Health Magazine* for March. He should feel that he is normal in any situation not demanding the use of his special deficiency.

Dr. Beckey classifies those children who are seriously handicapped, differing enough from other children to make adjustments to life very troublesome, in four groups: The physically handicapped (the crippled in body, the blind and the deaf); the mentally deficient (those who cannot compete satisfactorily in educational pursuits with the majority of children); the asocial (those who lie, steal, fight or withdraw entirely from any social situation), and those with a combination of physical, mental and psychologic maladjustments. "In the analysis and classification of all four groups of handicaps," she says, "the physician is the foremost consultant. . . . Not until he is consulted can the educational director proceed with her program of reeducation. . . .

"To be happy with a serious handicap, the child must have the right attitudes toward his deficiency; he must be healthy mentally. He is not mentally healthy until he is able to adjust himself to his environment with the least friction and at the same time find his life highly satisfactory and pleasant. A mental hygiene program for the handicapped child is not essentially different from that for the normal child, since both groups are motivated by the same fundamental human drives. All children want to be loved, to belong to some one, to achieve success, to gain approval and to feel emotional and economic security. The child also wants to feel well physically."

Medical Economics

Edited by R. K. Packard, M.D., Chairman of the Committee on Medical Economics of the Illinois State Medical Society, 826 East 61st Street, Chicago, Illinois.

I just paid the first installment of my 1941 income tax. Under plans now proposed by the Secretary of the Treasury it will double for 1942. That does not worry me — I have long felt that America was worth fighting for and paying for. This war, like all wars, is an economic war, both from the standpoint of cause and its final victory. It is everyone's war economically. We are being taxed and we are being deprived both to produce war material and to allow us to purchase defense bonds. As Americans, "we can take it." Once when a husky college football player applied to George Halas, of the Bears, for a position on his team, Mr. Halas asked him his qualifications; he replied, "I can take it." Mr. Halas informed him that players on the Bear team "Had to give it."

We have been in this war three and one-half months, and up to the present we have taken a lot. First, we were taken by surprise; our commanders were not even there. The surprise cost us millions of dollars in equipment and hundreds of lives. We were all aroused and we were instantly unified. We had been led to think by those supposed to know — that Japan could be taken care of very easily, in fact, almost any afternoon. We called it a dastardly act, and excused ourselves on that basis. We did, however, make a firm resolution, as a nation, that we could and would lick the Japs, Germans and Italians. We would do this by the spirit that built America. We would omit politics. Corporations would not profit by going on an all war basis. Labor would call off strikes for the duration of the war. Women would be molded into industry. Taxes would be raised. Defense Bonds would be bought. The medical profession would furnish the best medical care any army ever had. We are going to give it. Every man on the team is going to play for the team, and as soon as it is found out that he is not cooperating something is going to be done about it.

How are we progressing in the war up to date? We have had a series of reverses. We are told these were to be expected because of a surprise attack and because our commanders were not on the alert. If we were going to cut out politics why did it take so long after the report of the President's Committee before an order was issued for the commanders to be court martialed. This was after a public demand. As far as I can determine it is important for the morale of our people to know just what happened and why at Pearl Harbor. If innocent, let them be so declared and return them to service, if guilty let us get them off the payroll.

The Office of Civilian Defense had a political flavor to it and it took a united stand by the people to change it from a more or less personal political welfare group to a non-political defense program. We are now developing enough public opinion that there may be a chance of getting Walter Winchell out of his uniform or actually in the navy. Now, I think all of these things might be called petty. For instance, the salary we pay our commanders at Pearl Harbor will not be an economic determination of the war. Whether we had a few high salaried dancers in the Office of Civilian Defense did not make much difference. Whether Walter Winchell actually goes to fight will not make any difference in the outcome. The thing is that the American people are thinking and they are

furnishing the fighters and they are paying the bills. They would like to see politics and pull, out of our war effort.

What about business: On the whole business has done a fine job, there are some exceptions. The exceptions should be investigated. Management should not raise the pay of officers and give bonuses during the war. The capitalistic system is being tested. Management is being watched by every reformer and social change enthusiast. Public opinion is in the making. Purchasers for the government should have some idea of the cost of producing what they purchase. Business should have a fair margin of profit which will allow them proper maintenance of their property and a surplus to swing back to civilian production when the war is over. Corporation profits are not so easy to determine — on a basis of capital stock. In many instances the amount of outstanding capital stock represents a number of stock dividends. I have repeatedly pointed out that the declaration of stock dividends and extra cash dividends during the twenties did much to promote the wild stock market gambling of that period. Both politicians and management said, "Don't sell America Short." Carpenters, bricklayers, plumbers, doctors, lawyers, janitors, school teachers, the small business man all got aboard. We all bought. We looked at the paper every night to see how much Insull or Radio or Steel had gone up. We owned ten shares, it had gone up $10.00. We went out and bought something. Everything was humming. We finally had bought about all we could use, automobiles, radios, washing machines, silk shirts, joined a couple of clubs, etc. We quit buying, and before Mr. Hoover could get around the corner we were in a staggering depression. Let's not make that mistake after we win this war. Perhaps the government will see to it that we don't. We will pay our excess profits, etc., to the government who will re-ration them out in some form of social security. Even in the midst of our war we are planning on extending our social reforms or security as we call them. We are following generally the social reform of England, and the war may bring us up to them. Management faces a dual responsibility — that of producing the material to win the war, and that of re-creating confidence in free enterprise.

How about labor: Well labor has not been so bad. The rank and file are ok. The real trouble with labor is the politics in it and the management in it. Labor is somewhat in the same position that the politicians in industry and the management in industry were in. They are being coddled by the government. Yes, I think in the Coolidge and Hoover administrations the government coddled business in a certain way. They thought business powerful. Who ever heard of politicians not wanting power! George Washington did not want power — he refused a third term. Even in our infancy he thought political power dangerous. General Sherman did not want the nomination for President. He was disgusted with politicians. Do I think the present administration is coddling labor? I do. Why? For two reasons: First, the present administration is made up of politicians and social reformers. I think some of them are very sincere and they believe that certain social reformers are necessary to maintain our democracy. In other words, we must have a social revolution, but it can and should be bloodless. This group is sympathetic with labor and they just naturally coddle labor as a mother coddles a child. Now believing this social reform necessary, they coddle labor for another reason because labor has one great power, that of voting and if they are to achieve their ends they must have the labor vote to keep their politicians in power. Now the real politicians coddle labor, not because they see a necessity for all this social reform, in fact, some are against it, but they see labor as a mass voting power for them as long as they coddle more than the other fellow. What are the evidences that labor is being coddled? Strikes in war production plants with boys at the front at $21.00 per month. The one drafted with no choice of hours, station, danger or pay, going to the front to fight; the other bickering over double pay, hours of work and the closed shop. One marches on, and the other marches off. Do I think there should be a law against strikes and picketing? I think we already have too many bad laws and too few good ones. We should be careful about passing more bad ones. I don't think laws are necessary for labor. I don't think they are necessary for business. Let's take coddling out and see where we get. Public opinion and a firm hand in

Washington will do much to keep both business and labor under control. If not, let's legislate.

Many people are discouraged just now, that is, the ones I talk to privately. They come from all walks of life. What are they afraid of? They are afraid that Pearl Harbor was not just an accident — a surprise attack. They are afraid that we are not on the alert, that as always there is politics in the military affairs, that there is great waste in our government, that we are fighting to prevent dictatorship and that we are developing a mass dictatorship developed on social reform promises. They are asking why, with the shortage of labor for war and the necessity of taking women in industry, we must hold on to the W. P. A., the C. C. C. and the N. Y. A. They think the W. P. A. was bad enough when it was a necessity. They think the C. C. C. was a worthwhile undertaking, but no excuse exists for it today. They think the N. Y. A. has been headed by and sponsored by communists and social workers whose sole object was a job for themselves and an opportunity to implant their ideas in the minds of youth. They have a feeling that they are making sacrifices in money, in necessities, in personal freedom and in sons and husbands. The government passed laws regarding these things. They sort of express themselves as feeling that there is too much talk about democracy and too little demonstration of it. They think there is unnecessary fumbling. They think the referee is afraid to make decisions. They all think we will win the war. They all want to do their part. They all wonder about the next war. If any of us are coddling or fumbling, let's quit and if we really think anyone else is, let's tell them about it.

What has all this to do with medical economics? Medical care is an essential part of our social and economic structure. Despite the fact that we are the healthiest nation in the world, we have been attacked by the bloodless revolution crusaders and perhaps some others. We have been told that we must broaden our social reform. I think we need some social reform, just as we needed it and have had it for many years in the past and will need and have it in the future. Just as free enterprise breaks down, social reform will come in. But let us remember that free enterprise that has not broken down may be caught in the avalanche. Medical care for one hundred and thirty million people could easily become the best bait of those eyeing the White House. Many of the ablest men in Washington are watching public opinion. Public opinion cost the members of the House and Senate a pension. We must not be lulled into a sense of security because we are engaged in war. Every doctor should use all of his energy to preserve free enterprise in medicine. And we must be on the alert. And let's tell management that if they want to retain free enterprise for themselves they must help to retain it for us. We are doing our part in this war with no increased pay, no bonuses, no double pay, no thought of hours of work, no politics and no personal ambitions.

Dr. R. K. Packard, Chairman
Committee on Medical Economics.

A. M. A. JOURNAL REPORTS THE FORMATION OF AUSTRALIAN-AMERICAN ASSOCIATION

The formation of an Australian-American Association is reported in *The Journal of the American Medical Association* for February 7 by its regular Australian correspondent.

He says that the movement toward forming the Association "was initiated by a body of Australian citizens in the belief that the ideals and outlook on life of the peoples of America and Australia are so closely allied that it needs only a thorough knowledge of each other to achieve mutual respect and full understanding of each other's point of view; that the future peace, freedom and prosperity of the Pacific largely depend on the achievement of such an understanding and friendly regard between these two peoples, and that the close friendship of the vigorous democracies of the New World may well be the decisive factor in reestablishing the principles of freedom in a threatened civilization.

"The Australian-American Association has as its objects (1) to extend fellowship and hospitality to American visitors to our shores and to afford them facilities for obtaining an immediate knowledge of Australia, (2) to contribute to a better understanding by the Australian public of American affairs and point of view and (3) to attract in active membership citizens of both countries who will contribute to the furtherance of practical cooperation and mutual understanding."

Early tuberculosis is a silent disease lacking signs and symptoms. Sidney Walpaw, M.D., Ohio State Med. Jour., Apr., 1941.

Medicine and National Defense

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

The final steps in the printing and mailing of the enrolment form and questionnaire for physicians, dentists and veterinarians, described in the special article on the Procurement and Assignment Service which was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and in the various state medical journals have served to provide the United States Army and Navy medical departments with additional names of physicians, mostly under 36 years of age, who stated that they were available for immediate service. The continuous development of the Army and Navy medical departments means that additional names will have to become available, in considerable numbers, daily for some months to come. Following the completion of internships for the current year there will become immediately available to both the Army and the Navy medical departments a considerable number, perhaps as many as 60 per cent, of those who are now completing their hospital training. Especially important is the statement from the Army Medical Department that commissions for limited service will be granted to physicians with physical disabilities, who may serve in the zone of the interior. Those who receive such limited service commissions will, of course, be accepted with waivers of disabilities.

Every physician who receives the enrolment form and questionnaire should return it immediately in the franked envelop which will be enclosed. He will have opportunity to indicate a preference for various types of service. Once dicating his enrolment for war service and will he has enrolled, he will receive a certificate inbe privileged to wear the official button of the Procurement and Assignment Service.

In times like these the demands on rapidly expanding federal agencies are tremendous. The difficulties in securing a sufficient amount of competent stenographers and typists and of needed office material and of space have complicated greatly the problem of maintaining correspondence in the office of the Procurement and Assignment Service. It is hoped that physicians will be patient in awaiting replies to letters discussing their individual problems, realizing that the primary task at the present moment is to maintain for the Army and Navy medical departments adequate lists of men on whom they may call immediately. No doubt, as the work of the office becomes stabilized the promptness of reply to correspondence will be facilitated.

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VENEREAL DISEASE CONTROL OFFICERS

The War Department announced on March 5 that specially qualified medical officers would be assigned to control and prevent the spread of venereal diseases among American troops. Supplementing the program already in effect, a venereal disease control officer with the grade of major will be assigned to each army camp of 20,000 or more men, each field army, air force and armored force, each corps area or department, each division, general headquarters and headquarters, communications zone. While the control measures employed by the Army in recent years have produced a satisfactory decline in disease rates and have been adequate for peace time, the change to a war time status introduces new conditions requiring additional control

measures. The new control officers will function within the Army and with civil agencies, cooperating with other health agencies in stamping out possible sources of infection.

Within the military commands, measures to be taken to assure prompt and adequate control include:

1. Supervision, coordination and improvement of the venereal disease educational program.

2. Cooperation with other military agencies in order to provide an adequate recreational program.

3. Cooperation in the provision and maintenance of adequate facilities for prophylaxis.

4. The provision of adequate physical inspections of troops to detect early such cases as may cause failure to report at sick call.

5. The provision, standardization and supervision of facilities for the diagnosis and treatment of infected military personnel.

6. Close cooperation with local civilian health authorities to insure the reporting of probable civilian sources of infection which occur among soldiers in order to assist the civilian agencies in the elimination of foci of infection.

7. The collection and detailed analysis of data concerning the incidence and sources of infections acquired in the troops of the respective organizations.

In the civilian communities the control officers will cooperate with all agencies concerned in the control of venereal diseases to insure the effective repression of prostitution and the adequate quarantine and treatment of infected civilians, as a measure to prevent infection of soldiers. Cooperation will be carried out with the Bureau of Medicine and Surgery of the U. S. Navy, the Division of Social Protection and the Public Health Service of the Federal Security Agency, the Federal Bureau of Investigation, health and law enforcement agencies of states and smaller political units, and certain unofficial agencies such as the American Social Hygiene Association.

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COMMISSIONS IN ARMY RESERVE OPEN TO MEDICAL SCHOOL LOWER CLASSMEN

Provision for appointing physically qualified first and second year male students at approved medical schools, and bona fide accepted matriculants as well, as second lieutenants in the Medical Administrative Corps, Army of the United States, was announced on March 4 by the War Department. Officers appointed in this manner will not be called to active duty until they have completed their medical studies and internships and have qualified for appointment as first lieutenants in the Medical Corps. Previously only juniors and seniors in medical schools came under these provisions. The change broadens the base of procurement and assures the Army Medical Corps of a steady yearly increment of new officers for its reserve components.

Applications for commissions in this group are to be made through the dean of the medical school, who will forward the application and accompanying papers to the commanding general of the corps area in which the school is located. A certified statement that the applicant is a bona fide accepted matriculant in medicine at the institution is required.

Officers appointed under these provisions will be discharged for the convenience of the government if they discontinue their medical education, matriculate at an unapproved school of medicine, fail to complete successfully the prescribed four year course of medical instruction or fail appointment in the Army of the United States within one year after completion of the prescribed four year course of medical instruction. Students at approved schools of medicine, dentistry or veterinary medicine who already hold reserve commissions in other arms or services will not be ordered to active duty while completing their studies. Successful completion of their courses will qualify them for transfer as first lieutenants in the Medical Corps, Army of the United States.

NOTICE

Dr. Charles H. Phifer, Chairman for 6th. Corps Area, Procurement and Assignment Service for Physicians, Dentists and Veterinarians, maintains his official office at 30 North Michigan Ave., Chicago, and should be addressed there instead of The Federal Building, Chicago.

APPOINTMENTS BY OFFICE OF CIVILIAN DEFENSE

Dr. John S. Coulter, associate professor of physical therapy, Northwestern University Medical School, Chicago, has been appointed regional medical officer of the sixth Civilian Defense region with headquarters in Chicago. Dr. Coulter was a member of the regular army corps for about ten years and during the first world war commanded a hospital center in Savenay, France. Since his resignation from the Army Medical Corps in 1920 he has practiced medicine in Chicago. He is a member of the Council on Physical Therapy of the American Medical Association and is the author of a book entitled "History of Physical Therapy."

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BLOOD PLASMA

In the grim business of preparing for possible disasters the State of Illinois is also at the moment in the process of working out a plan for the Statewide collection and distribution of blood plasma for civilian use. This undertaking is, for a variety of reasons, not so simple as it may seem.

In the first place, the Nation's Armed Forces require virtually all the dried blood plasma that can be produced at present.

In the second place, the processing of plasma is one of the most delicate of bacteriological operations, and it can be done successfully only by specially trained laboratory-workers, and only with expensive equipment in laboratories approved by the National Institute of Health. The enthusiasm of many local communities for collecting blood plasma independently speaks well for their patriotic interest but may prove dangerous in its practical results. There are only a very few laboratories equipped to do the work successfully. And if the plasma is not prepared properly, it may produce severe toxic reactions in the patient.

In the third place, the State could under no circumstances set up a blood collection plan for civilians which might conflict with the all-important blood collection work which the American Red Cross is doing for the Armed Forces.

In spite of these and other difficulties, however, the value of blood plasma in times of certain possible civilian emergencies might be almost inestimable. It is well known that it takes at least a half an hour to perform an ordinary person-to-person blood transfusion in a hospital, with all the necessary typing and testing. And that half hour, added to the time spent in moving the patient to the hospital, might cost the life of a person who had — for example — been the victim of *shock,* in a civilian defense disaster. If large numbers of injured persons were involved, the delays in some cases would very likely amount to several hours. Blood plasma, on the other hand, can be administered right on the scene of the accident, and without any typing or testing. It is on this account that Governor Dwight H. Green is interested in obtaining a supply of blood plasma that would be immediately available for civilian use on a Statewide basis.

With the approval of the Office of Civilian Defense at Washington, the Illinois Department of Public Health is now preparing to collect blood for this purpose, from volunteer blood donors in a few communities. Plasma will be produced from this blood in one of the few available laboratories equipped to do the work, and approved by the National Institute of Health. It is expected that, when this plasma is processed, it will be placed in readiness for emergency use in several key cities in the State, from which it may be sent by airplane to the scene of any possible Illinois disaster.

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KEEP 'EM WORKING

Fundamentally it may be said that all of the war efforts of the Department have the single aim that Governor Dwight H. Green has expressed in his wartime health slogan: for victory, protect health, and *Keep 'Em Working!*

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ARMY NEEDS TEN THOUSAND NURSES

The U. S. Army Nurse Corps has immediate need for three thousand qualified registered nurses, and for ten thousand in all before the end of 1942, to keep pace with the expanding army, the War Department announced on March 13. Applicants who can fulfil the Army Nurse

Corps requirements will be appointed in the grade of Nurse, with the relative rank of Second Lieutenant. The pay is $840 a year in addition to maintenance and uniform equipment. Appointments as nurse will be for the duration of the war. Promotions to higher grades are made in peace time only after three years of service, but this rule no longer applies. The appointment authority for the Army Nurse Corps is vested in the commanding generals of the various corps areas. However, applications for appointment may be made through any local office of the National Red Cross Nursing Service, which is acting as procurement agency for the corps. When the quota for any particular corps area may have been filled, applications will be referred to another corps area where a shortage exists.

An eligible applicant must be of good character, unmarried, a citizen of the United States, between 22 and 30 years of age, at least 5 feet tall and of standard weight for her age and height. She must be a graduate of an accredited high school giving a four year academic course and of a school of nursing of approved standards, and a registered nurse. Application papers must be accompanied by an unmounted autographed photograph of the applicant taken within the preceding two years, and a statement from the proper official of the high school from which she was graduated, giving the date of graduation and her numerical place in the class.

The physical fitness of an applicant is determined by an examination by a board of medical officers at the nearest army post.

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THE WORK OF NURSES IN CIVILIAN DEFENSE

A nursing consultant is on duty as a member of the staff of the Medical Division of the Office of Civilian Defense in Washington, and the Subcommittee on Nursing of the Health and Medical Committee of the Office of Defense Health and Welfare Services also serves as the Nursing Advisory Committee of the OCD. To assist the regional offices of civilian defense, field nursing consultants of the U. S. Public Health Service, the U. S. Children's Bureau and the American Red Cross have been made available for consultation. One nurse representing the Red Cross and another representing one of the other two agencies have been assigned to each state. The most recent development in the nursing program is the establishment of state nursing councils, which are made up of representatives of nursing organizations, official agencies with nursing programs and the Red Cross. Nurses are required in the Emergency Medical Service now being developed by the medical division of the OCD for the care of casualties in hospitals and for service with emergency medical field units. Nurses will also be required for service in emergency base hospitals to be established in protected rural areas if needed for the reception of civilian casualties due to enemy action. Both the OCD and the Red Cross are urging promotion of the volunteer nurses' aide program to train assistants for nurses in casualty receiving hospitals and in field casualty services. Nurses are being urged by the medical division to arrange to teach home nursing courses, so that more women will be ready to care for sickness in their own homes during an emergency and relieve the hospitals of some of their load. Nurses are also asked to take Red Cross first aid courses so that they may be prepared to help in casualty services and also to qualify as instructors for first aid courses.

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SOLDIERS IN COMBAT AREAS TO CARRY SULFANILAMIDE TABLETS

The War Department announced on March 5 that every American soldier who goes into a theater of operations will be equipped with twelve sulfanilamide tablets in a special spill proof metal box as a standard addition to the first aid equipment of all troops in combat areas. Medical officers attached to units are to instruct the soldier in the proper use of the tablets, and careful checks are to be made periodically to see that each soldier carries the tablets. Experience in this war already has demonstrated the efficacy of the drug under war conditions, the War Department says. The small special container for the tablets can be operated with one hand by sliding the top of the box back, thus releasing a single tablet. Directions for use are printed on the back of the box.

REHABILITATION PROGRAM

Tests of a physical rehabilitation program, intended to make many registrants who were rejected because of minor physical defects fit for active military service, have been authorized in Maryland and Virginia, National Headquarters, Selective Service System, has announced.

Authorization of the rehabilitation programs in the two States marks the beginning of a long-planned nation-wide physical rehabilitation campaign. When the results of these pilot tests are evaluated, a date for the inauguration of the National program wil be set.

Only those registrants whose disabilities are certified by the Army as being remediable will be eligible to undergo treatment.

As one of the first steps in the Maryland and Virginia test programs, the Director of Selective Service of each State will submit to National Selective Service Headquarters lists of physicians and dentists qualified to correct physical defects of registrants. Physicians and dentists designated to render these authorized professional services will be paid by the Federal Government.

National Headquarters emphasized that any physician or dentist can apply to be designated to assist in the rehabilitation program. Physicians and dentists not already designated by registrants as their choice for dental or medical treatment, and other physicians and dentists who wish to take part in the program, may obtain the necessary application forms from their local boards.

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INFANTILE PARALYSIS IN ILLINOIS

With the closing of the year 1941 and planning for the President's Birthday drive against infantile paralysis, a review of the recent activities of the poliomyelitis virus in Illinois has timely interest. According to preliminary reports it appears that 398 recognizable cases of infantile paralysis occurred in Illinois last year, a total figure which was exceeded in this State only three times in the last ten years. There has been an observed tendency, in this geographic area, for poliomyelitis incidence to run high for two consecutive years, and then low for from two to four years before another peak is reached. If this pattern holds true, it may reasonably be expected that the case reports from this disease might be somewhat reduced during 1942 and 1943.

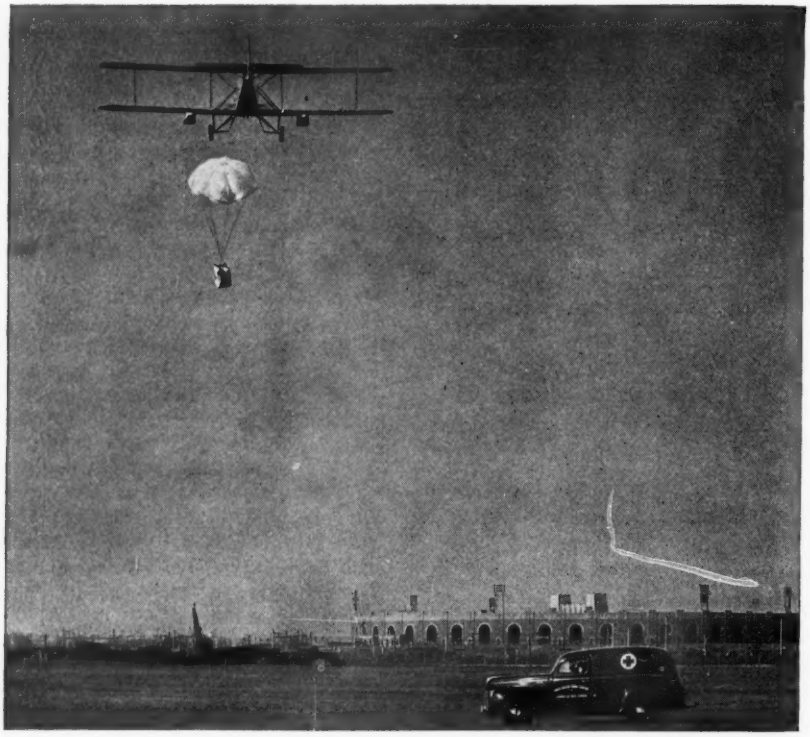
After the low point in infantile paralysis case reports in Illinois was recorded, with but 82 known cases, in 1929, the following two years had a high prevalence: 402 and 700 cases of infantile paralysis reported, respectively. There followed four years in which the average number of reported cases in the State was 216 and the median 222. This relatively quiet period in the history of the poliomyelitis virus in Illinois was again followed by two successive years of greater activity. In 1936 the case reports reached 689, and in 1937 the State suffered the highest incidence of poliomyelitis which it has ever recorded, with 779 cases reported. Again there followed a comparative lull, with hardly more than a hundred cases on record for 1938, and fewer than two hundred for 1939. This respite was again followed by a peak in 1940, when 583 reported cases of infantile paralysis occurred in the State; and the provisional figure, 398, for 1941 completes the picture of another two-year spell of heavy poliomyelitis incidence.

During the last three months of 1941 there were reported in Illinois an average of about two cases every three days, as against three cases every day during the same period of 1940. This greater prevalence in the final quarter of the year 1940 gave public health authorities no bright hopes for the outlook for infantile paralysis in Illinois in 1941. But the decrease at the close of last year may possibly be construed as a hopeful sign for 1942.

Should the State be lucky enough to experience once more a decline in the reported incidence of this disease, the breathing spell will be put to good purpose in the research laboratories of the Illinois Department of Public Health, where the current study of the disease has already attracted nationwide interest. Since no simple practicable measures by which children may be immunized against poliomyelitis are as yet known, these occasional quiet periods of low incidence should be seized upon by medical and public health workers as opportunities for uninterrupted study and research.

And by contributing to the support of the National Foundation for Infantile Paralysis, through its local County Chapters, the people of the State can aid materially in the task of developing a workable method for the prevention and control of the disease. Always campaigning actively against poliomyelitis, the Foundation has contributed funds and supplies to the important research project which the Illinois Department of Public Health is carrying forward with the cooperation of the Cook County Public Health Unit.

Collapse therapy is not a panacea for pulmonary tuberculosis. It is a valuable adjunct when used in conjunction with the time-proven principles now in common practice. Every patient should have the benefit of mature judgment to determine the possibilities of expediting recovery by the use of compression methods. An early diagnosis, however, together with the intelligent selection of therapeutic measures, offers a patient the best chance of recovery. C. Howard Marcy, M.D. Pennsylvania's Health, Dec., 1941



Sharp & Dohme, in cooperation with the Southeastern Pennsylvania Chapter of the American Red Cross and the United States Navy, have developed a "drop-proof" and "water-proof" package for their 'Lyovac' Normal Human Plasma. Twelve packages were dropped into water and twelve onto land, all without damage.

"LYOVAC" NORMAL HUMAN PLASMA

One of the most interesting developments in medicine is the widely increasing use of human blood plasma in the treatment of shock, burns, hemorrhage and hypoproteinemia .

And one of the most interesting contributions to the ready availability of human plasma at any time and at any place is 'Lyovac' Normal Human Plasma — a dried plasma preserved under vacuum which maintains its full therapeutic effectiveness for at least five years without refrigeration.

Over a decade ago the Research Laboratories of Sharp & Dohme began the development of the process and package which made possible this practical and valuable contribution to medicine.

The blood is obtained from healthy, fasting donors, and is then tested for freedom from disease. The cellular material is centrifuged out, and the clear plasma is drawn off, pooled, and filled into individual containers.

The plasma is frozen at a temperature far below zero and the containers placed in huge vacuum processing chambers where the moisture is drawn off under vacuum so that less than one-half of one per cent moisture remains.

While under vacuum, a rubber stopper is placed in the glass neck of the vial, the stem of which is then flame-sealed, thus providing an air-tight, moisture-proof container for the dried plasma under vacuum.

The dried plasma restores easily and promptly to the liquid state merely by the addition of pyrogen-free, triple-distilled water supplied with each package.

In civil practice it has met the emergency plasma requirements of many physicians and patients, and has contributed to the saving of many lives. In military practice, through the use of dried plasma processed by the company from blood donated to the American Red Cross for the Army and Navy, it has already proven its value at the torpedoing of the destroyer Kearny, and at Pearl Harbor.

PRELIMINARY PROGRAM

OF THE

One Hundred Second Annual Meeting

Illinois State Medical Society

HOTEL ABRAHAM LINCOLN
SPRINGFIELD, ILLINOIS
MAY 19, 20, 21, 1942

General Sessions

OPENING MEETING

TUESDAY AFTERNOON, MAY 19, 1942

1:00 Meeting officially opened by the President, Charles H. Phifer, Chicago.
Invocation—
Address of Welcome — The Mayor of Springfield.
Address of Welcome — President, Sangamon County Medical Society, Berton W. Hole, Springfield.
Report of Chairman, Committee on Arrangements, Hermon H. Cole, Springfield.
Adjournment for scientific meetings.

TUESDAY EVENING, MAY 19, 1942

8:00 Oration in Medicine —
"Macrocytic Anemia."
Cecil J. Watson, Professor of Internal Medicine, University of Minnesota Medical School, Minneapolis, Minnesota.

9:00 Oration in Surgery —
"Surgical Management of Lesions of the Esophagus, Stomach, Rectum and Colon."
Frank Lahey, Lahey Clinic, Boston, Massachusetts.

WEDNESDAY AFTERNOON, MAY 20, 1942

1:30 President's Address —
Charles H. Phifer, President, Illinois State Medical Society, Chicago.

THURSDAY MORNING, MAY 21, 1942

Induction of the President-Elect

Immediately following the completion of the second session of the House of Delegates, the President-Elect, Edward H. Weld, Rockford, will be inducted into the office of President of the Illinois State Medical Society by the retiring President, Charles H. Phifer.

All members and guests at the meeting are invited to attend this interesting function.

Joint Session

WEDNESDAY MORNING, MAY 20, 1942

Joint session of Sections on Medicine; Surgery; Public Health and Hygiene; Radiology; Pediatrics; and Obstetrics and Gynecology.

MEDICINE AND THE WAR

9:00 "A Prize for Good Health — Extending the 4-H Principles to Adolescent Youth."
Maurice L. Blatt, Chicago.

9:20 "Analysis of the Vision of 200 Consecutive Selectees."
G. Henry Mundt, Chicago.

9:40 "Neuropsychiatric Problems of the Present War."
Benjamin Boshes, Chicago.

10:00 "Medicine and the National Program."
Frank Lahey, Boston, Massachusetts.

10:20 "A Statistical Study of 500 Soldiers with Symptoms Referable to the Heart."
D. E. Markson, Chicago.

10:40 "The Detection of Venereal Disease in the Second Million Selectees."
R. A. Vonderlehr, Washington, D. C.

11:00 Title to be announced.
Earl Barth, Chicago.

11:20 "Neurocirculatory Disease in Draftees."
Harry A. Durkin, Peoria.

11:40 "Virus Disease and the Soldier."
Hobart Reiman, Philadelphia, Pennsylvania.

Section Programs

SECTION ON MEDICINE

F. Garm Norbury ..... Chairman
*M. Herbert Barker ..... Secretary
Chauncey C. Maher ..... Secretary Pro tem
*In service.

TUESDAY AFTERNOON, MAY 19, 1942

Joint session with Section on Surgery.

2:30 Title to be announced.
T. B. Throckmorton, Des Moines, Iowa.

3:00 "Surgery of the Biliary Tract."
V. S. Counseller, Rochester, Minnesota.

3:30 MEDICINE IN REVIEW — 1941 (Papers limited to 10 minutes)
"Shock Therapy."
S. N. Clark, Jacksonville.
Blast Injuries of the Central Nervous System."
Louis J. Pollock, Chicago.
"Chemotherapy."
Richard F. Herndon, Springfield.
"Allergy."
Ralph Mills, Decatur.
"Ulcer Management."
a. Medical
b. Surgical
V. S. Counseller, Rochester, Minnesota.

4:30 "Results of the Illinois Pneumonia Control Program," 1938-1942.
Doctors Sagen, Prange and Rosi, State Department of Public Health, Springfield.

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Surgery; Public Health and Hygiene; Radiology; Pediatrics; and Obstetrics and Gynecology.

(For Complete Program, See Joint Session.)

WEDNESDAY AFTERNOON, MAY 20, 1942

2:30 Chairman's Address
F. Garm Norbury, Jacksonville.

2:50 "Kenny Treatment of Poliomyelitis."
Philip Lewin, Chicago.

3:10 "Hypochromic Anemia in Malignancy."
Harold Swanberg, Quincy.

3:30 "Diuretic Salts."
Italo Volini, Chicago.

3:50 "Management of the Male Climacteric."
Clarence H. Boswell, Rockford.

THURSDAY MORNING, MAY 21, 1942

Joint session with Section on Surgery.

9:00 "Nutrition in the Surgical Patient."
Dwight E. Clark, Chicago.
9:30 "Alcoholism and Traffic Problems."
Lowell Selling, Detroit, Michigan.
10:00 "Carcinoma of the Rectum, General Considerations."
Nathan A. Womack, St. Louis, Missouri.
10:30 "Surgery in Infancy and Childhood."
Edwin M. Miller, Chicago.
Discussion opened by J. B. Gillespie, Urbana.
11:00 Clinicopathologic Conference.

SECTION ON SURGERY

Loyal Davis ..... Chairman
J. C. Thomas Rogers ..... Secretary

TUESDAY AFTERNOON, MAY 19, 1942

Joint session with Section on Medicine.
(For Complete Program, See Section on Medicine.)

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Medicine; Public Health and Hygiene; Radiology; Pediatrics; Obstetrics and Gynecology.
(For Complete Program, See Joint Session.)

WEDNESDAY AFTERNOON, May 20, 1942

2:30 "Burns Treated by Paper Tissue-Cod Liver Oil Ointment Dressings After Surgical Cleansing." Kodachrome Slides.
George Callahan, Waukegan.
Discussion opened by LeRoy H. Sloan, Chicago.
2:50 "The Myth of Post-Operative Pneumonia."
J. R. Buchbinder, Chicago.
3:10 "Preventive Therapy in Recurrent Urinary Lithiasis."
E. H. Droegemueller, Elmhurst.
3:30 "The Diagnosis and Treatment of Surgical Lesions of the Mediastinum."
John Dorsey, Chicago.
Discussion opened by Stanton Friedberg, Chicago.
3:50 "Treatment of Surgical Shock."
Arkell M. Vaughn, Chicago.
4:10 "Massive Intestinal Resection."
Everett Coleman, Canton.
Discussion opened by Karl A. Meyer, Chicago.
4:30 "Considerations Regarding the Depth of Anesthesia."
William Cassels, Chicago.
Discussion opened by Hugh O. Brown, Chicago.

THURSDAY MORNING, MAY 21, 1942

Joint session with Section on Medicine.
(For Complete Program, See Section on Medicine.)

SECTION ON EYE, EAR, NOSE AND THROAT

Clifton Turner ..... Chairman
G. Henry Mundt ..... Secretary

TUESDAY MORNING, MAY 19, 1942

9:00 "Suppurative Dacryocystitis."
Robert H. Good, Oak Park.
9:30 "Common Diseases Affecting Sound Conduction."
H. B. Perlman, Chicago.
"Sound Conduction in the Human Ear."
(A Motion Picture Demonstration)
10:00 "A Review of Amblyopia ex Anopsia."
George T. Morgan, Bloomington.
10:30 "Accommodative Power and Head Injury."
Virgil Wescott, Chicago.
11:00 "Pathologic Findings in Eyes Enucleated for Glaucoma."
Louis Bothman, Chicago.

TUESDAY AFTERNOON, MAY 19, 1942

2:00—3:30 INSTRUCTION COURSE IN EYE
2:00—3:30 INSTRUCTION COURSE IN NOSE AND THROAT
"Chronic Osteomyelitis of the Skull."
Hans Brunner, Chicago.
3:30—5:00 INSTRUCTION COURSE IN EYE
"Visual Problems in Modern Industry."
Hedwig S. Kuhn, Hammond, Indiana.
3:30—5:00 INSTRUCTION COURSE IN NOSE AND THROAT
"Hearing Test and Aids."
C. C. Bunch, Evanston.

TUESDAY EVENING, MAY 19, 1942

6:30 Annual Banquet of the Section.

WEDNESDAY MORNING, MAY 20, 1942

9:00 "Tamari Factors Determining the Duration of Acute Tonsilitis."
A. M. Burman.
9:30 "Conservation of Vision Among School Children in Illinois."
Miss Audrey M. Hayden.
10:00 "Sinusitis Versus Other Factors in the Production of Eye Diseases."
George H. Woodruff, Joliet.
10:30 "Mediastinitis Second to Surgical Pathology."
Glenn Greenwood, Chicago.
11:00 "The Larynx, Tracheobronchial Tree and Esophagus in Kodachrome."
Paul H. Holinger, Chicago.
11:30 Business Meeting.

WEDNESDAY AFTERNOON, MAY 20, 1942

2:00—3:30 INSTRUCTION COURSE IN EYE
"Present Trend in the Treatment of External Diseases of the Eye."
Peter Kronfeld, Chicago.
2:00—3:30 INSTRUCTION COURSE IN NOSE AND THROAT
"Conservative Treatments of Sinusitis."
Thomas Galloway, Evanston.
3:30—5:00 INSTRUCTION COURSE IN EYE
3:30—5:00 INSTRUCTION COURSE IN NOSE AND THROAT
"Plastic Surgery."
Samuel Salinger, Chicago.

SECTION ON PUBLIC HEALTH AND HYGIENE

*Walter C. Earle ..... Chairman
Roland R. Cross ..... Chairman Pro tem

Henry C. Niblack ..... Secretary
*In service.

"The Doctor Treats the Problem Child."
Paul L. Schroeder, Chicago.
"Public Health in War Time."
H. A. Holle, Chicago.
"Susceptibility of the Adult to Diphtheria."
A. J. Levy, Gilman.
"A Ten-Year Survey of Poliomyelitis in the Chicago Area."
Sidney O. Levinson and Albert M. Wolf, Chicago.
Title to be announced.
Allen McLaughlin, Springfield.
"The Survey of the State Department of Public Health."
Carl Buck, New York.

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Medicine; Surgery; Radiology; Pediatrics; Obstetrics and Gynecology.
(For Complete Program, See Joint Session.)

THURSDAY MORNING, MAY 21, 1942

Joint session with Sections on Pediatrics, and Obstetrics and Gynecology.
(For Complete Program, See Section on Obstetrics and Gynecology.)

SECTION ON RADIOLOGY

E. E. Barth ..... Chairman
Cesare Gianturco ..... Secretary
"The Value of Miniature Chest Films."
Arthur Webb, Glen Ellyn.
Discussion opened by W. DeHollander, Springfield.
"Roentgen Ray Aspects of Rheumatic Fever."
Sol Ditkowsky, Normal.
Discussion opened by Edwin Rypins, Bloomington.
"Considerations on a Thousand Chest X-Ray Examinations Performed on Men Applying for Employment."
A. A. Bauer, Chicago.
Title to be announced.
Sidney Mesirow, Chicago.
Discussion opened by Fay Squires, Chicago.
Film Clinic.

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Medicine, Surgery; Public Health and Hygiene; Pediatrics; Obstetrics and Gynecology.
(For Complete Program, See Joint Session.)

SECTION ON PEDIATRICS

Craig D. Butler ..... Chairman
A. J. Fletcher ..... Secretary

"The Physiologic Basis for Parenteral Fluid Administration."
Donald Cassels, Chicago.
"Technic of Intravenous Injection in Small Infants."
Mandel L. Spivek, Chicago.
"Indication for Blood Transfusion and for the Intravenous Use of Saline and Nutrient Solution."
James D. McKinney, Champaign.
"Observations on the Value of Intravenous Blood and Fluids in the Treatment of Acute Infections in Young Infants."
William Raycraft, Chicago.
"Methods of Preventing Reactions from Blood and Plasma Transfusions."
E. H. Fell, Chicago.
"The Parenteral Administration of Various Therapeutic Agents."
Robert D. Hart and Orville Barbour, Peoria.

Discussion of papers opened by F. W. Schlutz, Chicago, assisted by W. L. Crawford, Rockford, and Robert A. Black, Chicago.

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Medicine; Surgery; Public Health and Hygiene; Radiology; and Obstetrics and Gynecology.
(For Complete Program, See Joint Session.)

THURSDAY MORNING, MAY 21, 1942

Joint session with Sections on Public Health and Hygiene, and Obstetrics and Gynecology.
(For Complete Program, See Section on Obstetrics and Gynecology.)

SECTION ON OBSTETRICS AND GYNECOLOGY

Milton E. Bitter ..... Chairman
Clyde J. Geiger ..... Secretary

TUESDAY AFTERNOON, MAY 19, 1942

2:30—5:00
"The Tuberculous Obstetric Patient."
Fred M. Meixner, Peoria.
"The Third Stage of Labor."
Richard Paddock, St. Louis, Missouri.
"Anemia in Pregnancy."
E. Graham Evans, Aurora.

WEDNESDAY MORNING, MAY 20, 1942

Joint session with Sections on Medicine; Surgery; Public Health and Hygiene; Radiology; and Pediatrics.
(For Complete Program, See Joint Session.)

THURSDAY MORNING, MAY 21, 1942

Joint session with Sections on Public Health and Hygiene, and Pediatrics.

"Asphyxia Neonatorium."
Curtis J. Lund, Madison, Wisconsin.
"New Born Pathology."
T. S. Potter, Chicago.
Discussion opened by Orville Barbour, Peoria.
"The Affect of the War on Maternal Welfare Program in Illinois."
Fredrick H. Falls, Chicago.
Discussion opened by T. B. Williamson, Mt. Vernon.
"Supervision of Maternity Departments by the State Health Department."
Howard Lewis Penning, Springfield.
Title to be announced.
Clifford G. Grulee, Evanston.

PROGRAMS OF SPECIAL ORGANIZATIONS

SECRETARIES' CONFERENCE

Carl E. Clark, Chairman ..... Sycamore
R. T. Pettit, Vice-Chairman ..... Ottawa
C. Otis Smith, Secretary ..... Oak Park

TUESDAY EVENING, MAY 19, 1942

"Procurement and Assignment of Physicians for Military Service."
Charles H. Phifer, President, Illinois State Medical Society, Chicago.

"The Role of the Physician in Civilian Defense Programs."
John S. Coulter, Chairman of Physicians in Defense Work, Chicago.

MEDICAL WOMEN'S ASSOCIATION

Branches 2 and 17 of the American Medical Women's Association will meet in Springfield with the Illinois State Medical Society.

A scientific and social program is planned which includes an official breakfast and banquet.

Details will be published in the May Illinois Medical Journal.

ILLINOIS SOCIETY OF PATHOLOGISTS

O. H. Saphir, Chairman, Program Committee .... Chicago
I. Davidsohn, Secretary-Treasurer ..... Chicago

TUESDAY MORNING, MAY 19, 1942

9:00 "Subdural Hematoma."
Paul C. Bucy, Chicago.
9:30 "Myocarditis."
Eleanor Humphreys, Chicago.
10:00 "The Storage and Significance of Tissue Glycogen in Health and Disease."
Samuel Soskin, Chicago.
15 Minute Intermission
10:45 Clinicopathological Conference conducted by John F. Sheehan and George Hellmuth, Chicago.

PHYSICIANS' ASSOCIATION DEPARTMENT OF PUBLIC WELFARE STATE OF ILLINOIS

Rudolph G. Novick ..... President
Ethel A. Chapman ..... Secretary-Treasurer

TUESDAY MORNING, MAY 19, 1942

"Treatment of Mental Disorders by Electrically Induced Convulsions."
Erich Otten, Jacksonville.
"A Preliminary Report on the Attempts to Control Tuberculosis at the Chicago State Hospital."
M. Greenberg and J. V. Edlin, Chicago.
"Centrally Located Tumors of the Frontal Parts of the Brain."
W. R. Kirschbaum, Manteno.
"Tuberous Sclerosis."
H. Josephy, Lincoln.
"Prognostic Factors in Cases of Psychoses Following Pregnancy."
E. A. Chapman, Elgin.
"Acute Psychosis in Selectees."
S. D. Klow, Elgin.
"Psychotherapeutic Aspects of State Hospital Psychiatry."
George Perkins, Chicago.
"A Rorschach Study in a Case of Frontal Lobe Lesion."
John Endacott, Manteno.
"Coramine in the Therapy of the Psychoses."
Bernard Skorodin, Chicago.

ILLINOIS CHAPTER OF THE AMERICAN COLLEGE OF CHEST PHYSICIANS

Otto C. Schlack, President ..... Oak Forest
George Thomas Palmer, Vice-President .. Springfield
Darrell H. Trumpe, Secretary-Treasurer .. Springfield

TUESDAY, MAY 19, 1942

11:00 A. M. Business Meeting.
12:00 Noon Luncheon.
"Bronchial Obstruction as Visualized by Bronchoscopic Cinematography." (Motion Picture)
Paul H. Holinger, Chicago.
Members of the medical profession are invited to attend the luncheon. Meeting will be adjourned by 1:00 P. M.

WOMAN'S AUXILIARY PROGRAM

TUESDAY, MAY 19, 1942

9:00 A. M. Registration.
10:00 A. M. Pre-Convention Board Meeting.
12:00 Noon Announcements
Convention Chairman.
1:30 P. M. General Meeting.
Mrs. Harry Otten, Presiding.
3:00 P. M. Address
E. H. Weld, President-Elect, Illinois State Medical Society.
3:30 P. M. Tribute to Abraham Lincoln
Lincoln's Monument
Lincoln's Home
7:00 P. M. Dinner — Leland Hotel
Speaker — Mrs. R. E. Mossiman, President National Medical Auxiliary.

WEDNESDAY, MAY 20, 1942

9:00 A. M. Registration — Leland Hotel
9:30 A. M. General Meeting.
Mrs. Harry Otten, Presiding.
10:30 A. M. In Memoriam
Mrs. H. B. Henkle, Chairman
11:00 A. M. Presentation of Problems of a Present Day Medical Auxiliary, conducted by Mrs. S. R. Magill.
11:45 A. M. Announcements
Mrs. D. H. Trumpe, Convention Chairman.
12:30 P. M. President's Luncheon — Leland Hotel
Speakers — Hon. Dwight H. Green, Governor of Illinois.
Col. Paul G. Armstrong, Director, Selective Service System, State of Illinois.
2:30 P. M. Post Convention Board Meeting.
Mrs. W. J. Wanninger, Presiding.
3:30 P. M. Tea — Home of Dr. and Mrs. H. H. Cole, 605 Williams Blvd.

SOCIAL FUNCTIONS FOR ALL LADIES

TUESDAY, MAY 19, 1942

3:00 P. M. Address — E. H. Weld, President-Elect, Illinois State Medical Society.
3:30 P. M. Tribute to Abraham Lincoln
Mrs. Harold M. Camp, officiating.
7:00 P. M. Dinner — Leland Hotel
Speaker — Mrs. R. E. Mossiman, President, National Medical Auxiliary.

WEDNESDAY, MAY 20, 1942

12:30 P. M. President's Luncheon — Leland Hotel
Speakers — Hon. Dwight H. Green, Governor of Illinois.
Col. Paul G. Armstrong, Director, Selective Service System, State of Illinois.
3:30 P. M. Tea — Home of Dr. and Mrs. H. H. Cole, 605 Williams Blvd.

MATERNAL WELFARE COMMITTEE LUNCHEON

The fifth annual luncheon of the Illinois State Maternal Welfare Committee will be held at noon on Wednesday, May 20 at the Hotel Abraham Lincoln in Springfield.

The program will be a round table discussion on toxemias of pregnancy led by Dr. F. H. Falls of Chicago; Dr. A. B. Owen, of Rockford and Dr. W. C. Scrivner of East St. Louis.

All physicians of organized medicine are cordially invited to attend.

MEETINGS OF THE HOUSE OF DELEGATES

TUESDAY AFTERNOON, MAY 19, 1942

3:00 First meeting of the House of Delegates called to order by the President, Charles H. Phifer, for Reports of Officers, Councilors, Committees, Appointment of Reference Committees, Introduction of Resolutions, and for the transaction of other business which may come before the House.

THURSDAY MORNING, MAY 21, 1942

9:00 Second meeting of the House of Delegates called to order by the President for the Election of Officers, Councilors, Committees, Delegates and Alternates to the American Medical Association, Reports of Reference Committees and action on same, Action on Resolutions, and for the transaction of other business to come before the House.

SCIENTIFIC EXHIBITS

Frank J. Jirka, Chairman ..... Chicago
James P. Simonds, Director of Exhibits ..... Chicago

"Health Education in the Doctor's Office."
American Medical Association — Thomas G. Hull, Chicago.
"Burns Treated with Cod Liver Oil Ointment."
George B. Callahan, Waukegan.
"Abortion."
F. H. Falls, Chicago.
"Gastroscopy as an Aid in Diagnosis."
Leo L. Hardt, Chicago.
"Tumors of the Chest."
Jerome R. Head, Chicago.
"Pulmonary Tuberculosis: Differential Diagnosis and Treatment."
Karl J. Henrichsen, Municipal Tuberculosis Sanitarium, Chicago.
"Health and War."
Illinois Department of Public Health — Leona East, Springfield.
"The Wartime Speed-up in Health Protection."
Illinois Department of Public Health — Leona East, Springfield.
"Medical Care Program for Recipients of Old Age Assistance and Aid to Dependent Children."
Division of Public Assistance, Illinois Department of Public Welfare, Springfield.
"The Treatment of Epitheliomas with Combination of X-ray and Destructive Procedures."
John M. McCuskey, Peoria and Wm. J. Morginson, Springfield.
"An Improved Method for Fixation of Fractures of the Neck of the Femur."
A. A. Mertz, Decatur.
"A Photographic Exhibit of Skin Diseases Peculiar to War."
Edward A. Oliver, Chicago.
"The Medical Profession in Civilian Defense."
Sixth Regional Civilian Defense Region, John S. Coulter, Regional Medical Officer, Chicago.
"Amputation at the Knee Joint: A Physiologic Amputation."
S. Perry Rogers, Chicago.
"Short Wave Diathermy: Technical and Clinical Considerations."
Milton G. Schmitt, Chicago.
"Motion Picture in Technicolor Showing Result of Treatment of Carcinoma of the Cervix Uteri."
Frank E. Simpson, Chicago.
"Endocrine Regulation of Growth."
Willard O. Thompson, N. J. Heckel and R. P. Morris, Chicago.
"Endometriosis."
Joseph A. Tuta, Chicago.
"Rectal Sodium Pantothal as a Basal Anesthesia to Supplement General, Local or Spinal Anesthesia."
M. L. Weinstein, E. L. Adams, and G. Light, Chicago.
"Cancer Control Campaign of Education by the Woman's Field Army."
Woman's Field Army of the American Society for the Control of Cancer — Mrs. Arthur I. Edison, State Commander, Chicago.

Technical Exhibitors

AT THE 1942 ANNUAL MEETING

Abbott Laboratories, North Chicago, Illinois
A. S. Aloe Company, St. Louis, Missouri
The Armour Laboratories, Chicago, Illinois
Ayerst, McKenna & Harrison, Rouses Point, N. Y.
Biochemical Research Laboratories, Chicago, Illinois
The Borden Company, New York, N. Y.
Burroughs Wellcome & Company, New York, N. Y.
Camel Cigarettes, New York, N. Y.
Carnation Company, Oconomowoc, Wisconsin
Doho Chemical Corporation, New York, N. Y.
Eli Lilly and Company, Indianapolis, Indiana
C. B. Fleet Co., Inc., Lynchburg, Virginia
General Electric X-Ray Corporation, Chicago, Illinois
Gerber Products Company, Fremont, Michigan

H. J. Heinz Company, Pittsburgh, Pennsylvania
Horlick's Malted Milk Corporation, Racine, Wisconsin
The Kelley-Koett Mfg. Co., Inc., Covington, Kentucky
Kellogg Company, Battle Creek, Michigan
Lederle Laboratories, Inc., Chicago, Illinois
Mead Johnson & Company, Evansville, Indiana
The Medical Protective Company, Fort Wayne, Indiana
Mellin's Food Company, Boston, Massachusetts
Merck & Company, Inc., Rahway, New Jersey
The Wm. S. Merrell Company, Cincinnati, Ohio
The C. V. Mosby Company, St. Louis, Missouri
M & R Dietetic Laboratories, Inc., Columbus, Ohio
V. Mueller and Company, Chicago, Illinois
A. E. Mallard, Detroit, Michigan
Nutrition Research Laboratories, Chicago, Illinois
Parke, Davis & Company, Detroit, Michigan
Pet Milk Sales Corporation, St. Louis, Missouri
Petrogalar Laboratories, Inc., Chicago, Illinois
Philip Morris & Co. Ltd. Inc., New York, N. Y.
W. B. Saunders Company, Philadelphia, Pennsylvania
Sharp & Dohme, Philadelphia, Pennsylvania
Smith, Kline & French Laboratories, Philadelphia, Pennsylvania
E. R. Squibb & Sons, New York, N. Y.
Frederick Stearns & Company, Detroit, Michigan
Sutliff & Case Co., Inc., Peoria, Illinois
White Laboratories, Inc., Newark, New Jersey
Winthrop Chemical Company, New York, N. Y.
John Wyeth & Brother, Inc., Philadelphia, Pennsylvania

NOTES ON TECHNICAL EXHIBITS

ABBOTT LABORATORIES, Booth 8

Be sure to visit this booth where the Abbott-trained representatives in attendance will be more than glad to exchange notes with you regarding the newer Abbott specialties on display.

Nembutal, Pentothal Sodium, Sulfa-drugs, Intravenous Solutions, Bismarsen, Bismo-Cymol, Gold Sodium Thiosulfate, Sorbitol, Strophanthin-K, Cofron, Iberin, Histamine Diphosphate, Glucophylline, Trisodarsen, Acetarsone, Aldarsone, Multi-Vitamin products, Thiamin, Riboflavine, Nicotinic Acid, Nicotinamide, Sod. Pantothenate, Ejectal, Pyrodoxine, Klotogen, Hykinone, Kayquinone, Thromboplasin, Natopherol, Estrone, Estriol, Progestin, etc., etc., are included in this comprehensive exhibit.

A hearty welcome awaits you here. So! Stop in and See Us!

A. S. ALOE COMPANY, Booth 31

A. S. Aloe Company cordially invites you to visit Booth 31. They will have on display a complete line of American-made Stainless Steel Surgical Instruments, Surgical Supplies, Laboratory Apparatus and Physical Therapy Equipment.

Many new and exclusive items will be shown. Mr. T. H. Greenwell will be in attendance.

THE ARMOUR LABORATORIES, Booth 23

The Armour Laboratories are in the unique position of having access to one of the world's largest supplies of fresh glandular materials and over a period of fifty years have developed a technique of blending, processing and assaying these variable materials to produce preparations of maximum and unvarying potency.

In attendance at the Armour booth you will find representatives who will gladly furnish information on new Endocrine Products of the Armour Laboratories. A cordial invitation is extended to all members of the Illinois State Medical Society to visit our display in booth No. 23. Mr. R. H. Andrew will be in charge.

AYERST, McKENNA & HARRISON (UNITED STATES) LIMITED, Booth 30

"ADVANCEMENT IN THE FIELD OF ORAL HORMONAL THERAPY"

We take pleasure, particularly at this time, in announcing to the medical profession a new form of estrogen, demonstrating high oral activity.

Preliminary reports on the oral administration of this new conjugated estrogen, elaborated at the Ayerst Experimental Laboratories, are such as to lead early investigators to report that withdrawal bleeding may be produced in the human subject if desired.

Absence from toxic reactions and side effects, reports of symptomatic relief and marked improvement in the sense of general well-being of the patients treated, together with its economy, justify its use generally where estrogenic therapy is indicated.

As in the case of Emmenin, this new elaboration bears the stamp of approval of Dr. J. B. Collip, Director of the research institute of Endocrinology, McGill University, and is marketed by Ayerst, under the trade name

"PREMARIN"

Ayerst, McKenna & Harrison (United States) Limited
Biological and Pharmaceutical Chemists, Rouses Point, N. Y.

BIOCHEMICAL RESEARCH LABORATORIES, Booth 38

The Biochemical Research Laboratories will exhibit a display of vitamin products that are of current interest to the medical profession and will also include current teletype flashes of war and vitamin news.

THE BORDEN COMPANY, Booth 1

Up-to-date information about Borden's scientifically designed infant food at Booth No. 1. BIOLAC, a liquid modified milk, facilitates the preparation of formulas which fully satisfy all nutritional requirements of early infancy except vitamin C. NEW IMPROVED DRYCO, (now spray-dried instead of roller-dried), has increased potencies of vitamins A and D and quicker solubility. It retains the same high-protein, low-fat composition of original Dryco and offers the same unique formula flexibility. MULLSOY, an emulsified food for infants allergic to milk, is exceptionally palatable, readily digestible, and easy to prepare for feeding. It is a liquid preparation of soy bean flour, soy bean oil, water, and added carbohydrate and mineral salts. Other infant foods of special merit include BETA LACTOSE, the **improved** milk sugar, KLIM, powdered whole milk, MERRELL-SOULE FOWDERED MILKS, and BORDEN'S SILVER COW IRRADIATED EVAPORATED MILK.

BURROUGHS WELLCOME & COMPANY (U. S. A. INC.), Booths 3 & 4

BURROUGHS WELLCOME & CO. (U. S. A.) INC., New York, presents a selected group of fine chemicals and pharmaceutical preparations, together with new and important therapeutic agents of special interest to the medical profession.

CAMEL CIGARETTES, Booths 28 and 29

Camel Cigarettes will exhibit large detailed photographs of equipment used in comparative tests of the five largest-selling brands of cigarettes. These tests proved that Camels burn slower and contain less nicotine in the smoke than other cigarettes. Representatives will be available to discuss this research.

CARNATION COMPANY, Booths 17 and 18

Be sure to visit the Carnation Company exhibit in Booth No. 17 and 18. There you will see displayed an interesting model of the famous Carnation Milk Farms where cattle breeding and feeding experiments are carried on for the purpose of improving the dairy herds supplying the many Carnation evaporating plants. The story of Carnation's program of supervision of raw milk sources and the careful processing of Irradiated Carnation Milk is also told in an interesting manner.

DOHO CHEMICAL CORPORATION, Booth 36

The Auralgan Exhibit consists of a model of the human auricle four feet high, together with a series of twenty-four three dimensional ear drums, modelled under the supervision of outstanding otologists. Each of these drums depict a different pathologic condition based upon actual case observation and prepared, in so far as possible, with strict scientific accuracy so as to be highly instructive and interesting to all physicians.

As the observer looks into the large ear through a proportionately sized speculum, the ear drums appear successively within the canal so as to similate actual conditions seen in life. The successive changes of the ear drums are affected by automatic mechanism, and accompanied by a brief description of the condition.

This is the first time that such a complete modelling of ear drums has ever been executed in this scale.

ELI LILLY AND COMPANY, Booth 15

The Lilly exhibit is evidence of the interest of Eli Lilly and Company in the Illinois State Medical Society. Lilly products both old and new will be on display and Lilly representatives will be present to serve physicians in every possible way.

C. B. FLEET CO. INC., Booth 6

PHOSPHO-SODA (Fleet), a saline laxative, has been presented to the medical profession for over 50 years. This eliminant is suggested when a rapid non-griping action is desired. It is recommended in gall bladder disorders.

The profession is cordially invited to visit the booth of the C. B. Fleet Company, Inc.

GENERAL ELECTRIC X-RAY CORPORATION, Booth 47

For Illinois physicians there are 23 trained sales and servicemen in G-E branch offices and regional service depots located in Chicago, Springfield, and St. Louis, ready to carry out the long-established company policy that service — technical or mechanical — must be maintained throughout the life of any G-E apparatus.

X-ray equipment, electromedical equipment, the electrocardiograph, and accessory items, being technical in design and operation, require a trained organization of field men to sell intelligently, install properly, and help the user throughout the life of the G-E apparatus. For this important reason we want you to know the G-E man in your locality. Won't you visit our exhibit booth and get acquainted?

GERBER PRODUCTS COMPANY, Booth 12

The complete line of Gerber Foods will be on display — two dry, precooked cereals (one a wheat cereal, the other an Oatmeal which is wheat-free) 18 Strained Foods and 10 Junior or Chopped Foods. Booklets available for distribution to mothers or to patients on special diets, as well as the professional literature, all of which will be sent to registrants.

H. J. HEINZ COMPANY, Booth 14

The Heinz exhibit featuring Strained and Junior Foods merits your thoughtful attention if you prescribe for infant feeding or adults on soft diets.

The popular Nutritional Charts have something new added — a section on the "Application of the Science of Nutrition to Dietetics." While you're at the exhibit, register for the 10th edition.

The Heinz representatives will be glad to be of service.

HORLICK'S MALTED MILK CORPORATION, Booth 39

You are cordially invited to visit the Horlick Booth (Number 39), and enjoy a refreshing serving of chocolate malted milk.

This palatable, delicious and easily digested food-drink is often indicated when the doctor prescribes a liquid or semi-liquid diet. It is basic nutrition because it is a scientifically well balanced combination of proteins and carbohydrates of full cream milk and choice grains.

The attendants at the booth will be willing and glad to answer any inquiries and explain the qualities of our new vitamin fortified product.

THE KELLEY-KOETT MFG. CO., INC., Booths 42 and 43

One of the most important X-ray advances of many years, The Multicron Control, will be demonstrated at Booths Nos. 42 and 43 by The Kelley-Koett Manufacturing Company, Inc. of Covington, Kentucky. The Multicron is incorporated in the Keleket W-3-100 Combination Unit and is designed to take care of troublesome details automatically, leaving the doctor free to concentrate on the important factors of technique. It also assures work of uniformly high quality.

The W-3-100 is a complete Combination Unit with Generator, Tube Stand and Table. It permits Radiography and Fluoroscopy at all angles from Trendelenberg to vertical. It is equipped with Bucky Diaphragm, motor tilt table, stereoscopic shift, etc.

The Keleket Booths will be under the direction of Mr. G. E. Geise, Vice President. Don't fail to see it.

KELLOGG COMPANY, Booth 2

Kellogg's ready-to-eat cereals have an important part in the national nutrition program. Pep (whole wheat flakes with added bran) has been enriched with vitamins B and D, the vitamins so frequently lacking in the average American diet. Kellogg's other whole wheat and bran cereals — Wheat Krispies, Krumbles, Shredded Wheat, All-Bran and Bran Flakes — are rich in minerals and vitamin B too. Ask for your set of medical reprints covering recent research with bran. Corn Flakes and Rice Krispies are included freely in wheat-free and low residue diets.

Diet Lists, 100 Calorie Portion Chart, Vitamin Chart and Wheat Allergy folder available at the Kellogg booth.

LEDERLE LABORATORIES, Booth 52

Lederle Laboratories will again exhibit with the Illinois State Medical Society.

It is our pleasure to invite the members and visiting professional men to visit our booth where we will be pleased to discuss with them any of our outstanding products in either the biological or pharmaceutical field. Complete information of the various Sulfonamide products will be available.

M & R DIETETIC LABORATORIES, INC., Booth 27

M & R Dietetic Laboratories, Inc., booth number 27, will display Similac, a food for infants deprived partially or entirely of breast milk; also powdered SofKurd. Representatives will appreciate the opportunity to discuss the merit and suggested application of these products.

MERCK & CO. INC., Booth 20

War medicine and public health requirements have focused particular attention on the antibacterial properties of the sulfonamides, the nutritional value of the vitamins, and the antisyphilitic value of the arsphenamines and Tryparsamide.

Physicians who have need for a rapidly acting anesthetic for short operative procedures will appreciate the convenience of Vinethene for home, office, or emergency use.

Chronic ulcers, Raynaud's disease, scleroderma, and vasospastic conditions of the extremities may be benefited by the use of Mecholyl Chloride administered by ion transfer. Subcutaneous injection of Mecholyl Chloride may be employed for controlling attacks of suricular paroxysmal tachycardia.

Pyridium is established as an outstanding preparation for prompt symptomatic relief in urogenital infections.

Literature on all of these important products is available at the Merck booth, where Mr. S. A. Gaffney will be in charge.

MEAD JOHNSON & COMPANY, Booth 16

"Servamus Fidem" means We Are Keeping the Faith. Almost every physician thinks of Mead Johnson & Company as the maker of Dextri-Maltose, Pablum, Oleum Percomorphum and other infant diet materials, but not all physicians are aware of the many helpful services this progressive company offers physicians. A visit to Booth No. 16 will be time well spent.

MEDICAL PROTECTIVE COMPANY, Booth 60

The Professional Liability risk of the doctor cannot be given an underwriting classification with any other type or types of insurable hazards, without disadvantage to the doctor. The circumstances out of which arise the reciprocal rights and duties of a doctor and his patient are peculiar to their relationship; the interest of the doctor in the management and disposal of charges of negligence against him is not to be compared to that of any other class of damage suit defendants. The most exacting requirements of adequate liability protection are those of the Professional Liability field.

The Medical Protective Company is exclusively engaged in that field.

Our representatives, thoroughly trained in Professional Liability underwriting, invite you to confer with them at exhibit booth No. 60.

MELLIN'S FOOD, Booth 25

Physicians are cordially invited to call and make inquiries regarding details of composition and application of Mellin's Food. During the 75 years of its existence Mellin's Food has so well established itself as to be worthy of consideration in any attempt to arrange nourishment for infants, children and adults.

WM. S. MERRELL COMPANY, Booth 80

Among the new pharmaceutical developments to be featured at the Merrell exhibit are a combination of Nitranitol (brand of mannitol hexanitrate) with Phenobarbital, for the palliative treatment of essential hypertension, and a new anesthetic and antiseptic suppository, Diothoid, for relief of pain in hemorrhoids and other anorectal conditions.

Members and guests of the Society are cordially invited to visit the Merrell booth for a discussion of these and other distinctive therapeutic specialties.

C. V. MOSBY COMPANY, Booth 5

The C. V. Mosby Company extends to convention visitors a cordial invitation to visit Booth No. 5.

Among the new books to be displayed are Kilduffe-DeBakey "The Blood Bank and the Technique and Therapeutic of Transfusions," Dieckmann "The Toxemias of Pregnancy," Blair "Cancer of the Face and Mouth," Thewlis "The Care of the Aged," Willius "Mayo Cardiac Clinics," Top "Handbook of Communicable Diseases," Tassmann "Eye Manifestations of Internal Diseases," Mettler "Neuroanatomy" and Alexander "Synopsis of Allergy." New editions will include Crossen & Crossen "Diseases of Women," Porter-Carter "Management of the Sick Infant and Child," Marriott-Jeans "Infant Nutrition," Hermann "Synopsis of Diseases of the Heart and Arteries," and Dodson "Synopsis of Genitourinary Diseases."

V. MUELLER & COMPANY, Booth 55

Despite the demands of our unprecedented offense effort, priority restrictions and shortages in materials, the exhibit of V. Mueller & Company (Chicago) will include several new developments in fine surgical instruments and equipment. A representative selection of the complete line will also be shown. The display will be in charge of Mueller Representatives, F. M. Harmer and Chester I. Lovested.

NUTRITION RESEARCH LABORATORIES, Booth 35

This exhibit shows by means of x-rays, transparent photographs, and wax models, the important types of chronic arthritis. The beneficial effects producted by Ertron in rheumatoid, osteoarthritis, and gout, are described in scientific publications which are available for free distribution.

The therapeutic advantages of Bezon, a whole natural vitamin B complex, are also depicted.

Pendron will be introduced to the profession at this meeting. Because the army recruiting stations and governmental agencies have found that human deficiencies are very common and multiple in nature, the availability of Pendron, which contains all of these vitamins in adequate amounts, is of vital interest at this time in preventing and combating the cause of so much disability.

PARKE, DAVIS & COMPANY, Booth 54

Featured in the Parke-Davis Exhibit will be the sex hormones, Theelin and Theelol; antisyphilitic agents, such as Mapharsen and Thio-Bismol; posterior lobe preparations, including Pituitrin, Pitocin and Pitressin; and various Adrenalin Chloride Preparations.

PET MILK COMPANY, Booths 21 and 22

An actual working model of a milk condensing plant in miniature will be exhibited by the Pet Milk Company in Booths No. 21 and No. 22. This exhibit offers an opportunity to obtain information about the production of Irradiated Pet Milk and its uses in infant feeding and general dietary practice. Miniature Pet Milk cans will be given to each physician who visits the Pet Milk Booth.

PETROGALAR LABORATORIES, INC., Booth 7

This year Booth No. 7 will be occupied by Petrogalar Laboratories, Inc. who offer, in addition to samples of the Five Types of Petrogalar, an interesting selection of descriptive literature and anatomical charts. Ask the Petrogalar representatives to show you the HABIT TIME booklet. It is a welcome aid for teaching bowel regularity to your patients.

PHILIP MORRIS & CO., LTD., INC., Booth 13

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glycol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject, and problems on the physiological effects of smoking.

W. B. SAUNDERS COMPANY, Booth 11

This publishing house will exhibit a great number of new books and new editions that will be of unusual importance at this time to those attending the 1942 Meeting. They will include the first of the Official Military Surgical Manuals dealing with Maxillofacial Surgery, Duncan's "Metabolic Diseases," Johnstone's "Occupational Diseases," Steinbrocker's "Arthritis," a new Beckman's "Treatment," a new Christopher's "General Surgery," the "Surgical Practice of the Lahey Clinic," Walters, Gray & Priestley's "Gastric Carcinoma," advance sheets of Lundy's "Anesthesia," and the 1942 Mayo Clinic Volume.

SHARP & DOHME, Booth 24

Sharp & Dohme will have their new modern display at Booth No. 24 this year, featuring 'Delvinal' Sodium, 'Lyovac' Normal Human Plasma, 'Lyovac' Bee Venom Solution, and other 'Lyovac' biologicals. There will also be on display a group of biological and pharmaceutical specialties prepared by this house, such as 'Propadrine' Hydrochloride products, 'Rabellon,' 'Padrophyll,' 'Riona,' 'Depropanex,' and 'Ribothiron.' Capable, well-informed representatives will be on hand to welcome all visitors and furnish information on Sharp & Dohme products.

SMITH, KLINE AND FRENCH LABORATORIES, Booth 19

We again welcome the opportunity of displaying our products, including Benzedrine Inhaler, Benzedrine Sulfate Tablets, Paredrine Aqueous and Pentnucleotide, to the members of the Society. Our representative will be only too glad to discuss the products exhibited and will endeavor to answer any questions that may arise concerning them.

E. R. SQUIBB & SONS, Booth 26

E. R. Squibb & Sons, located in Booth 26, will endeavor to convey scientific and pertinent information about some of their most important products by striking visual methods. Numerous photographs, charts, and demonstration packages will graphically point up the important features of these products, among which will be included new additions to their Vitamin, Glandular and Specialties lines.

Well informed representatives will be on hand, moreover, to welcome visitors and to furnish further information on the products displayed.

FREDERICK STEARNS & COMPANY, Booth 46

Doctors are cordially invited to visit our attractive convention booth to view and discuss outstanding contributions to medical science developed in the Scientific Laboratories of Frederick Stearns & Company.

Our professional representatives will be please to supply all possible information on the use of such outstanding products as Neo-Synephrin Hydrochloride for intranasal use, Mucilose for bulk and lubrication, Ferrous Gluconate, Potassium Gluconate, Gastric Mucin, Susto, Trimax, Appella Apple Powder, Nebulator with Nebulin A, and our complete line of Vitamin products.

SUTLIFF & CASE CO., INC., Booth 24

Sutliff & Case Co., Inc., of Peoria, Illinois will have on display the original Thiocyanate Pharmaceuticals for judicious Thiocyanate Therapy in the treatment of Arterial Hypertension. The display will include:

Thio-Cara, an aromatic liquid preparation containing a therapeutic dose of potassium thiocyanate; it also contains aromaticized cascara to induce elimination — so often essential in treating arterial hypertension.

Thiocyan Tabs, a calcium derivative of the thiocyanate, specially coated.

Potassium Thiocyanate Tablets, 1½ grain and 3-grain specially coated.

The Blood Thiocyanate Test Kit — for the estimation of the Thiocyanate (Sulfocyanate) level of the blood. A practical modification of Barkets' method.

*Journal A. M. A., 106 (March 7th, 1936), 726

These worthy Thiocyanate preparations have been supplied to the medical profession over a period of many years with numerous gratifying results reported.

WHITE LABORATORIES, INC., Booth 33

White's Cod Liver Oil Concentrate will be presented in Booth 33, for your consideration. Here you may obtain complete information concerning the entire field of cod liver oil concentration, with clinical data substantiating the efficacy of White's Liquid, Tablet and Capsule Concentrates.

Qualified representatives and descriptive literature, including reprints and excerpts from medical literature, will further direct attention to the contribution of White Laboratories in the Vitamin A and D Field.

White Laboratories holds an established place as one of the world's most extensive users of cod liver oil for pharmaceutical purposes and is the world's largest manufacturer of cod liver oil concentrates.

All physicians are cordially invited to visit the booth.

WINTHROP CHEMICAL COMPANY, INC., Booth 32

The Winthrop Chemical Company, Inc. extends a cordial invitation to visit booth 32, where representatives will gladly discuss the latest contributions made by this firm to the medical profession.

JOHN WYETH & BROTHER, Booth 10

You are cordially invited to visit Booth No. 10 where John Wyeth & Brother will exhibit its HEMO-GUIDE — an aid to hematologic diagnosis. Copies of the HEMO-GUIDE will be available for doctors who wish them, and our representatives will be happy to show how it assists in diagnosing types of anemia.

Among the specialties to be displayed will be —

AMPHOJEL — Wyeth's Alumina Gel for the management of peptic ulcer.

BEPRON — Wyeth's Beef Liver with Iron for the nutritional anemias.

B-PLEX ELIXIR — For the administration of the complete vitamin B complex.

BEWON ELIXIR — The palatable appetite stimulant.

KAOMAGMA — For the control of diarrhea regardless of etiology of the condition.

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Original Articles

THE KENNY TREATMENT OF INFANTILE PARALYSIS DURING THE ACUTE STAGE

PHILIP LEWIN, M.D.
Associate Professor of Bone and Joint Surgery, Northwestern University Medical School
CHICAGO

OUTLINE

I. Introduction — General Discussion — Sources of my Material
II. Kenny Theory and Practice — Terminology — Pathologic Changes — Basis for Treatment
  A. Examination — Muscle Analysis
  B. Immediate Treatment
III. Hospital Unit for Kenny Treatment.
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IV. Treatment
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    3. Restoration of muscle coordination
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V. Kenny's Results, as reported
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VI. Comparison of results by various methods
  ?? Controlled Studies ??
VII. Teaching the Kenny Method — Manual
VIII. Illustrations

With a full realization that the Kenny treatment of Infantile Paralysis has received sufficient indorsement of the medical profession to justify its general employment in order to properly evaluate its efficacy, I hereby present a concise description of the theory and especially the practice during the acute stage of this dreadful disease.

Miss Elizabeth Kenny, an Australian nurse claims that she has proved that the clinical picture of infantile paralysis is the opposite of that generally accepted. Her method of treatment is diametrically opposed to previously accepted methods. So far as I have been able to discover, it is original.

Miss Kenny predicates her theory on the belief that the basic harmful factors in infantile paralysis are pain, muscle spasm, mental alienation and muscle incoordination. She believes that muscles which were formerly supposed to be flaccid, are for the most part, stretched from their normal resting positions by the abnormal condition of spasm in the primarily affected muscles. Her treatment begins immediately upon making the diagnosis. It is aimed at the abolition of pain and muscle spasm which are evidently the root of all peripheral poliomyelitis

This is a condensed copy of a presentation made before the Pediatric and Orthopaedic Surgery Staffs of Cook County Hospital, Chicago, March 24, 1942. Lantern slides and movies supplemented the paper.

evil. This is accomplished by hot fomentations and proper rest positions, without benefit of splints. Her system of muscle reeducation is based upon the substitution of "mental awareness" for the pathological "mental alienation," and the restoration of coordination of muscle activity. She says her method consists of 70% nursing and 30% physical therapy.

As progressive medical men, our aims are: 1. to ascertain facts, 2. to learn how to apply them, 3. to keep the medical profession informed (a) by obtaining accurate information as soon as possible, (b) by disseminating that information among the medical profession immediately.

We cannot accept nor reject Miss Kenny's work and theory "in toto," at this time, but we want to know: 1. What are the facts? 2. What we are going to do with the facts?

We want to put all the facts before the medical and allied professions before they read any more quasi-medical publications.

American Medical men demand scientific proof rather than clinical observations. At the moment they will have to be satisfied with the latter. Who knows exactly how quinine cures malaria, or precisely how the sulfonamides cure infections? Parents of polio-children say "from the practical point of view, who cares?"

Articles in lay magazines have given descriptions of the historical aspects of Miss Kenny and her methods, the personal attributes of the woman, her vicissitudes and her triumphs. Most of the profession refused steadfastly to accept the fact that the Kenny method was either different, or in fact, of any value*

Before I visited Miss Kenny in Minneapolis I had been asked by a large number of persons to give them the facts about her treatment. Since I returned I have been asked by many more. I shall devote most of my attention to the acute phase of the disease.

My position in the Kenny matter can be summed up as follows:

1. Let us find all the good there is in the method and employ it, in the interest of the largest number of patients possible.
2. Let us give Miss Kenny her just recognition and reward.
3. Let us keep the subject within normal bounds.
4. Let us protect the children who now have, have had, or will have poliomyelitis.
5. Let us protect the method against exploitation.
6. Let us protect the public against the misuse and abuse of the method.
7. Let us educate every person concerned: viz; the family doctor, the pediatrician, the neurologist, the orthopaedic surgeon, the physical therapist, the nurse, the public health nurse, the public, the patients and their relatives.

I wish to sound a warning in regard to cultists, charlatans and unqualified practitioners who will advertise, promise results they cannot produce and guarantee cures indiscriminately. This group includes fakers, quacks, and certain unscrupulous persons who capitalize on, and exploit human suffering.

My exposition is based upon many sources and has gone through the clearing-house of time, experience and debate. My material is a composite of personal conversation with and letters from Miss Kenny, several of her addresses, her books and my personal contact with her and her associates who include American doctors and Australian and American physical therapists and nurses.

Miss Kenny personally showed me movies of her method. I gleaned much from her trained personnel, especially the Australians and several observers. The whole list included Doctors Cole, Knapp, Pohl and Krusen, Miss Mary Stewart Kenny, Mr. Bill Bell, Misses Harvey, Daniels, Plastridge, Stevenson and Johnston.

My personal experience with the application of the method was obtained at Cook County and Michael Reese Hospitals, Chicago.

Dr. Melvin S. Henderson made the introductory arrangements for Miss Kenny's visit to Minneapolis and the interview with Doctors Wallace Cole and Miland Knapp, Professors of Orthopaedic Surgery and Physical Therapy respectively, the College of Medicine, the University of Minnesota. The program was made possible by the good offices of Mr. Basil O'Connor, Presi-

*It is interesting to refer to the Principles and Practice of Physical Therapy — Volume 2, Chapter 8 — page 5 — by Legg and Merrill.

dent of the National Foundation for Infantile Paralysis, New York City. Doctors Morris Fishbein, Irvin Abell, and Don Gudakunst and Mr. Peter Cusack were advisors to the Foundation.

At the personal invitation of Miss Kenny I went to Minneapolis and saw her work, firsthand.

It is a revelation to see the meticulous care used in Kenny's demonstrations especially of the muscles and movements (1) in and around the neck and shoulder, (2) in and around the hip, (3) in the back.

Her theory which is a complete reversal of previously accepted thought, has given a tremendous stimulation to further study, observation and research in the field of poliomyelitis and has made many of the leaders of the medical profession "sit up and take notice." It is urgent that we make a revision of our concept of the best physical treatment during the acute stage of the disease. This does not mean that our knowledge of the cause, pathologic changes and diagnosis should be modified nor does it mean that the status of convalescent serum is modified in the minds of some authorities. Our surgical attack on the residual effects of the disease will be strikingly reduced. Miss Kenny's results speak for themselves. Let me emphasize the fact that it is impossible to carry out the Kenny method without prolonged personal observation of her work, and an intensive study of her method. It cannot be done from the printed sources now available.

The method will be used on an empirical basis, at the moment.

As scientific men we always return to the question of a scientifically controlled study, of any form of treatment.

The whole matter of comparable cases in poliomyelitis appears at the moment to be a scientific myth. There are so many variable factors. There are variables even in siblings. Not even twins are comparable in poliomyelitis.

The chief points in treatment are that Miss Kenny employs hot fomentations and muscle reeducation but does not use splints, respirators, braces or massage.

One of Miss Kenny's contributions is the direction of attention of the medical, nursing and physical therapy professions to the importance of treatment during the acute stage of the disease.

The Kenny system is the reverse of traditional treatment. She categorically refuses to entertain any thought of compromise or combination of methods.

Kenny has proved that not only is her treatment the opposite of that previously accepted, but the symptoms presenting themselves in patients afflicted with the disease are also the opposite.

The maximum benefit to be derived from the Kenny Method is predicated upon its application immediately after the disease is diagnosed. This means that the treatment should be started during the quarantine period either in the home or in the isolation ward of a hospital. The slogan is evidently "you can't do business with spasm," paraphrased to read "you cannot reeducate muscles that are compelled to work against their opponents that are in a state of spasm."

She never employs massage and she never uses a splint of any kind, or a respirator. She never permits active or passive exercises of a muscle that is still in spasm.

In his report to the National Foundation for Infantile Paralysis on December 4, 1941, and again on January 14, 1942, before the American Academy of Orthopaedic Surgeons, Dr. Wallace Cole stated that he and his colleagues in the Twin Cities of Minnesota were enthusiastic about Miss Kenny's treatment, and were absolutely certain that it was the best of all methods. He emphasized the fact that the treatment should start the day the diagnosis is made.

At the meeting of the Medical Advisory Committee of the National Foundation for Infantile Paralysis held in New York in December, 1941, consideration was given to reports on the Kenny treatment. After the Committee on Research for the Prevention and Treatment of After-Effects, heard the reports from various authoritative clinical medical observers on their investigation of the subject, it adopted the following statement:*

"The National Foundation for Infantile Paralysis has supported studies of the Kenny technic under the auspices of the medical school of the University of Minnesota and specifically under the direction of the Department of Ortho-

*J.A.M.A., Dec. 20, 1941
The Foundation News — Vol. I, No. 2, Dec., 1941

pedic Surgery. The Minneapolis General Hospital was chosen for these studies as beds were available and the necessary supervision was possible by members of the orthopedic staff and the Physical Therapy Department of the University of Minnesota.

"Since June, 1941 work on the Kenny treatment of infantile paralysis during the early stage has been going on at both the University Hospital and the Minneapolis General Hospital under the personal supervision of Miss Kenny. Most of the physical therapists of the Twin Cities and many from elsewhere have been working with Miss Kenny and acquiring a knowledge of her methods. The course for physical therapy technicians at the University of Minnesota includes training in the Kenny Method.

"The director of the Physical Therapy Department at the University Hospital and the Minneapolis General Hospital, aided by funds of the National Foundation for infantile Paralysis, is making a detailed study of the method so that he and others may be able to continue with the teaching after Miss Kenny and her staff return to Australia.

"It is the opinion of the Committee on Research for the Prevention and Treatment of After-Effects of the National Foundation for Infantile Paralysis, after a study of the report of the workers at the University of Minnesota, that during the early stage of infantile paralysis the length of time during which pain, tenderness and spasm are present is greatly reduced and contractures caused by muscle shortening during the period are prevented by the Kenny method. The general physical condition of the patients receiving this treatment seems to be better than that of patients treated by some of the other methods during a comparable period."

Following this action, the Committee on Epidemics and Public Health and the Committee on Education, of the National Foundation for Infantile Paralysis, aware of the implications of the foregoing statement as it relates to the application of the Kenny method in the early stage of infantile paralysis issued the following:

"Health officers and physicians, including especially pediatricians, now have the responsibility of early recognition of cases of infantile paralysis and the prompt application of appropriate nursing technics and physical methods to these patients.

"During the past year the Kenny method has been observed with the aid of the National Foundation in several well recognized medical institutions. For best results this method involves care and the use of special skills under qualified medical supervision.

"The Committee on Epidemics and Public Health and the Committee on Education recommend to the National Foundation for Infantile Paralysis that public health officials throughout the nation be given as promptly as possible information which may be available regarding the nature of the Kenny technic and its integration with other measures of treatment, and the personnel available for its application in outbreaks of infantile paralysis.

"The Committees recommend furthermore that the training program of the National Foundation for Infantile Paralysis be expanded to provide additional training for considerable numbers of nurses and physical therapy technicians, and recommend expansion of the training program so as to make available additional personnel fully trained in the essentials and principles of the Kenny method.

"The Committees recommend furthermore that the Committee on Medical Publications of the National Foundation for Infantile Paralysis consider immediately the development of a concise manual providing the essential principles and details of the Kenny method and of other applications of hydrotherapy and physical treatment in the early stage of infantile paralysis.

"The Committees recommend that state health departments, health officials in larger communities, and other official agencies concerned with the care of infantile paralysis also develop a program to train personnel in the application of the Kenny technic in conjunction with other early treatment of infantile paralysis."

I shall describe her theory based on her book and on personal talks with Miss Kenny and her trained assistants. Drs. Cole, Pohl, Knapp and many others have furnished much information.

Miss Kenny describes her theory on the basis of 4 main signs and symptoms, viz: 1. Pain, 2. Muscle Spasm, 3. Mental Alienation, 4. Muscle Incoordination.

Unfortunately these terms denote meanings that are not readily understood by American doctors, physical therapists or nurses. My interpretation of them is as follows:

MUSCLE SPASM: means a physical condition of a skeletal muscle, characterized by tenseness, firmness, tautness, prominence, tenderness, and pain upon being put on the stretch, because of its incomplete relaxation.

MENTAL ALIENATION which occurs in the flaccid muscles, means the abnormal condition which permits or determines a physiological but not an organic interruption of continuity of impulses between the central nervous system and the skeletal muscles.

INCOORDINATION means the unphysiological condition which predisposes, permits or determines the substitution of muscle action by one muscle for the one which normally performs that certain movement. It is a physiologic interruption or paradoxical innervation, producing a "twist" in neuromuscular function.

Kenny claims that the affected muscle in acute poliomyelitis is the "muscle in spasm." She claims that what has been called the flaccid muscle is the "alienated " muscle. She believes that muscle spasm is a constant accompaniment of the muscle pain and that it may be the real and sole cause of pain. An alienated muscle atrophies even though it is the normal muscle; thereby causing flaccidity.

She claims to have proved that the painful muscles are the muscles in spasm and are the ones primarily affected by the disease; they are shortened through spasm and eventually become hard, inelastic masses, paralyzing their opponents from disuse, providing they, too, are not in a state of spasm and shortening.

Kenny states the term spasm is used when there is a series of contractions felt in the part or incoordinate contraction of the part. A contraction is a condition of unrelaxed shortening, which if taken in time, can be relaxed passively. It is without exaggerated tonus and may relax during sleep. A spasm however, will not relax while the patient is asleep.

Mental alienation disappears when the correct treatment is given and permanent paralysis is avoided when the condition of incoordination has been attended to, accompanying the treatment for alienation. "Proprioceptive re-education" as early as possible is also an important factor in her treatment. The presence of the foot board placed at the bottom of the bed retains the "standing reflex" for future use. The spasm in the acute stage of poliomyelitis, is responsible for the major part of the deformities and apparent loss of power in muscles.

Unaffected opponent muscles are stretched beyond their normal relaxation. It is impossible for them to contract, as it is impossible for the muscles in spasm to relax and take up the slack. It is impossible for the overstretched muscle to pull from its point of attachment. The "brake" that is caused through the over-contracted opponents will not allow this muscle to contract.

The detection of incoordination and its immediate treatment minimizes the length of treatment and restores rhythmic muscle action. If the acting and opposing muscle groups are attempting to contract together, all efforts of contraction in either group are discouraged until the basic condition is overcome.

The combination of unattended spasm in the affected muscles and the neglect of the consideration of (1) receptor, or peripheral apparatus which receives stimulation, and (2) the proprioceptor, or apparatus which receives stimulation within the tissues of the body, cannot be expected to be successful where mental alienation is a prominent symptom.

Miss Kenny's chief claim is that the "muscles in spasm" are the muscles primarily affected by the disease. While the condition of spasm produces harm in the painful muscle affected by the disease, the opposing group is mentally alienated, therefore will not contract and very frequently becomes paralyzed from disuse.

She also claims that in 100 per cent of cases, stiffness or muscle shortening caused through muscle spasm is present from the onset of the disease. She believes that spasticity is the prelude to flaccidity and that spasm is the precursor of paralysis. An apparent joint stiffness is in reality unrelaxed muscle contractions caused by unreleased spasm. As evidence of the paramount importance ascribed to muscle spasm, I call your attention to the fact that Miss Kenny divides the disease into two stages: (1) Acute: while pain and spasm are present; (2) Convalescent: after pain has been relieved and spasm eliminated.

The most frequently overlooked "muscles in spasm" that produce harm in one area around the shoulder and neck, are the pectoralis major, the trapezius and sternocleidomastoid; and secondly around the hip, the iliacus, sartorius, gluteus medius and tensor fasciae latae. In the calf and foot, the greatest harm done by "muscles in spasm," is caused by the gastrocnemius. In the back the greatest harm is done by the erector spinae muscles.

Miss Kenny's theory of the situation in acute anterior poliomyelitis is manifested by the presence of:

1. Pain.
2. Muscle spasm.
3. Muscle incoordination, due to pain and the substitution of muscle function.
4. Mental alienation in which state the patient loses the faculty of performing normal muscle function.

Her treatment is aimed at:

1. The abolition of muscle spasm.
2. The substitution of mental "awareness" for the pathological "alienation."
3. The restoration of coordination of muscle activity.

Her treatment includes:

1. Proper bed placement — natural rest position.
2. A foot board to preserve the "standing reflex."
3. Hot fomentations to relieve pain and muscle spasm.
4. Special analysis, classification and reeducation of muscles.
5. Passive movements.
6. Concentration of active movements on the insertions of muscles and tendons.
7. The abandonment of all splints, respirators and artificial feeding.

The most common symptoms presenting themselves in the acute stages are muscle spasm and incoordination.

She claims that fixed foot-drop is not caused through paralysis of the anterior group of muscles, but a spasm in the posterior group. Muscle spasm produces a brake by the shortening of one muscle, which prevents its overstretched opponents from contracting physiologically and thereby becoming alienated.

If spasm is neglected a contracture will be established causing deformity,

If, for example, the psoas muscle is allowed to remain in spasm or contraction until a contracture is produced a seriously exaggerated lumbar lordosis will occur, especially when the lower limbs are immobilized in the position of abduction.

She describes and repeatedly demonstrates a furrow in the back of the neck due to spasm of the regional muscles. She calls attention to a furrow or crease in the region of the pectoralis major tendon as evidence of spasm.

There is no doubt that Kenny is guided to a considearble degree by the basic concept of Sherrington's Reciprocal Innervation.

There is no doubt that hot fomentations are of definite value. Regardless of the explanation, the fact remains and the proof will take second place, for the time being.

Muscle spasms or muscular contractions occur from the onset both in the affected muscles and in other groups not similarly affected, e.g., the antagonists and synergists. They are generally accompanied by pain and in Kenny's opinion, are due primarily to ischemia. Persistence of this condition leads to general stiffness and permanent shortening in affected limbs with attendant deformities and loss of volitional control.

The spastic condition is aggravated through skin reflexes by any factors which cause ischemia, increased excitability or increased tone in the muscles. The attempt on the part of the patient to control pain increases the hypertonicity. Pain is a symptom in all stages of the disease and arouses in the patient considerable fear of its occurrence. He attempts to control it, therefore, by tending to immobilize himself and lies rigid in bed, frightened to move or permit anyone to move him.

Spasm can be regarded as due to several causes, viz: (a) attempts at voluntary movement, (b) reflex activity, (c) attempt of the patient to control pain by immobilizing himself.

An article in the International Bulletin published by The National Foundation for Infantile Paralysis, lends much weight to Miss Kenny's theory. According to Haggquist a number of research workers have described cases of spastic paresis as a result of acute poliomyelitis

(Strumpell 1885, Medin 1896, Pasteur 1897, Bucelli 1897, Williams 1899, Neurath 1901, Marie 1902, Hoffmann 1904, Negro 1905, Spieler 1910 and Wernstedt 1917). In certain cases the spastic paresis appears as the only form of paralysis, or in combination with a flaccid paralysis. It is due in certain cases to a form of cerebral infection, when the spasticity may be combined with an aphasia (Wernstedt), or to the infection having attacked the pyramidal tract within the spinal marrow.

PHYSICAL EXAMINATION

Kenny's Physical Examination is aimed at the discovery and location of Pain, Muscle Spasm, Alienation and incoordination. The detection of muscle spasm is of paramount importance. For instance, a spasm in the medial head of the gastrocnemius will cause a supinated heel and a spasm in the lateral head will cause an abducted heel. When the heel is out of balance a foot deformity must follow. A contraction of the tensor fasciae latae and its sheath produces a tense band which can be felt in the lateral and anterior aspects of the upper portion of the thigh. This causes flexion and rotation at the hip joint.

In her muscle analysis, the most important considerations to determine are: 1. Which muscles are in spasm, 2. Which muscles are alienated, 3. Which muscles are incoordinated.

Classification and Synchronization of Muscles. — Before undertaking any action in the restoration of muscle function, a thorough knowledge of the classification and synchronization of muscles is imperative. Spasm, incoordination and mental alienation must be overcome before a suitable contraction can be obtained in the muscle affected by any of these symptoms.

Muscle Classification. — Having combatted the conditions of spasm, incoordination and mental alienation, the next consideration is the accurate classification of the muscles of the neck, upper limbs, trunk, back and lower limbs.

For many years many general practitioners, pediatricians and neurologists were of the opinion that the orthopedic surgeon should not be called in on a case of infantile paralysis until the quarantine period was over. It is during this period however, that Miss Kenny does her most constructive work.

Space does not permit a discussion of several important questions, such as, whether muscle spasm is of central or peripheral origin; whether spasm is of inflammatory, toxic or anoxemic origin; the relation of muscle fasciculation to massive fibrillation; the peripheral circulatory factor; the relation of acetyl choline to the myoneural junction or end-plate; the relation to fatigue; the effect of decreased blood flow on the acetyl choline content; the influence of potassium ions; the question of organic paralysis vs. pseudo-paralysis; the pathologic changes in or around the sympathetic nerve ganglia; the importance of the "cooling off" process between applications of the hot fomentations.

Miss Kenny makes a big point of the restoration of non-functioning or non-paralytic muscles. She implies that her method is "all or none." She has done much for the medical and allied professions as well as for the victims of infantile paralysis and their relatives.

Her technic can be outlined as follows:

I. Proper bed placement — natural rest position.

II. A foot board to preserve the "standing" reflex, i.e., to maintain and stimulate the plantar reflex.

III. Hot fomentations to relax muscle spasm. In some cases every half hour; in others every 2 hrs. from 8 A.M. to 8 P.M. In some cases during the night also, depending upon the severity of symptoms, especially pain. The packs do not cover the large joints.

IV. Special analysis classification of muscles. Determination of spasm, alienation and incoordination.

V. Reeducation of muscles, concentrating on insertions of muscles and tendons. Active and passive movements as complete as comfort permits. Muscle stimulation: a passive manual extension of muscle is given in connection with reapplication of packs. This is an important procedure. Passive exercises are given twice daily as pain will permit, after the first few days.

VI. The avoidance of fatigue.

VII. The abandonment of all splints, respirators and artificial feeding. Difficulty in breathing is caused by spasm in muscles used in

respiration (except bulbar cases) which may be relieved by packs. Patient must be taught to breathe properly.

HOT WET PACKS

Hot wet packs are applied to all "muscles in spasm."

Woolen strips saturated with boiling water for 20 minutes, are taken out of the sterilizer or other container, with forceps and run through a wringer twice so they are practically dry.

The fomentations are boiled in a sterilizer and are then lifted out with forceps and placed in a mobile tub, under a piece of waterproof sheeting. The tub is wheeled to the patient's bedside where everything has been placed in readiness. The nurse lifts the fomentation with forceps and runs it quickly twice through the wringer attached to the tub and applies it to the area to be treated. (figure 1.) They are applied very quickly from one joint to another, but not over the joints because that would enclose tendon insertions. These dressings are protected with oiled silk and covered with dry warm wool. They may be changed every half hour during the first 24 and 48 hours. This routine is continued 24 hours a day in some cases.

Figure 1. — Hot fomentations applied for gastrocnemius spasm. Dotted lines indicate extent of applications, covered by rubber sheeting and binder.

After the extremely sensitive period has passed, the procedure is carried out every two hours from 8 A.M. to 8 P.M. A two-person team is very efficient. A small roll of towel material is placed under the knees. The "proprioceptive nerve center" area should not be covered during the night, as long as there is spasm in the muscles.

In the very acute cases where the patients are seriously ill, the foments are changed as fast as they cool. Her principle is that the foments are put on very hot, and remain hot for 15 minutes. They gradually cool down, and that cooling process is good for the muscles and nerves.

During the treatment with fomentations the patients should drink much water.

APPLICATION OF FOMENTATIONS TO SPECIAL REGIONS

Fomentations Applied to Thighs. — Two lengths of cotton-wool, long enough to embrace the thigh, are applied and covered with a piece of waterproof material.

A quarter of a single woolen blanket is soaked in hot water and twice wrung quickly through an ordinary laundry wringer. The cotton-wool with cloth is then brought around the fomentation. Finally, the outer ends of a towel are brought over the limb, and tucked under the medial surface and underneath the thigh. It does not require bandages to secure the fomentation in position. The same technic is adopted for application to the arms or trunk.

The quarter single blanket is wrung through the wringer, and the first corner placed at the origin of the glutei, the opposite corner forming an angle — that is the third corner of the blanket is taken over the back of the knee. (figure 2.)

Application of Fomentations for Painful Abdominal Spasm. — It is necessary to shorten the muscle a little by flexing the thigh at right angles to the body, and to flex the leg at right angles to the thigh supporting it in this position, and then to treat the muscle spasm by the application of hot fomentations. (figure 3.)

A bed cradle with a flat top is placed over the

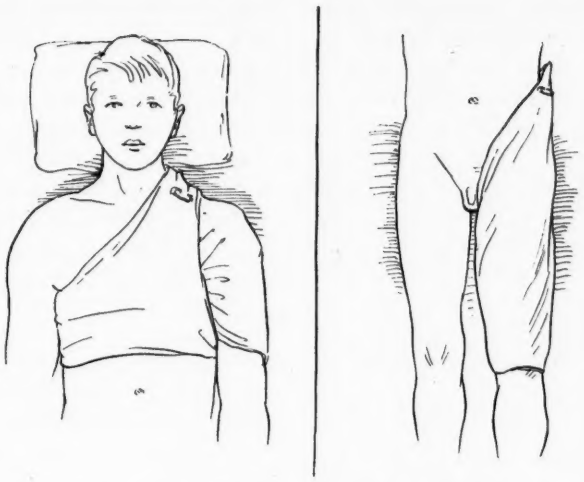

Figure 2. — Left — fomentations applied to chest and left shoulder and arm. Right — fomentations applied to left hip and thigh.

body of the patient, and hot water bags placed on the top of the cradle as well as in the pockets attached to the sides. (When electricity is available an even temperature can be maintained with an electric bulb.)

When an abdominal spasm remains obstinate, and is likely to become chronic, a coat of paraffin wax of low grade melting properties, between 36° and 40° centigrade is effective. The reflexes become more normal when the wax is removed.

POSITION OF NATURAL REST IN BED

Upon admission to the hospital, the patient is placed upon a rigid bed to keep the body in correct alignment. Boards are placed under the mattress, a board is placed at the foot of the bed to maintain the sensation of contact, both in the recumbent and erect positions, and to re-establish the normal standing reflexes which are comparable to the "Stutz" reflex in other animals, that is, the inducement of the normal contraction of all standing muscles when the sole of the foot comes in contact with a hard surface. It is not used while there is painful spasm of the posterior leg muscles.

A small pad is placed under the knees and sometimes a padded roll is used to prevent the

Figure 3. — Hot fomentations for abdominal and low back "muscles in spasm." Note flexion of thighs to relax psoas muscles.

legs from rotating outward. Patients are turned to the prone position for an hour twice a day. In the face-lying position the feet are placed over the foot of the mattress so that they are at right angles to the lower part of the leg and the toes are in the clear. The side-lying position is not permitted. The arms remain at the sides of the body. A pillow for the head is permitted and, after coordination has been reestablished, the patient is allowed freedom of movement in bed.

In addition to keeping a neutral position the foot pressure against the board serves to preserve the patient's feeling of normal contact with the floor so that when they are permitted to stand up the sensation will not have been lost. She never allows anything to rest against the outer aspect of the leg which would seem like a splint because it would interfere with the proprioceptive reflexes.

The mattress is pulled up toward head of the bed and a flat foot board is placed at the foot with a space between it and the mattress. The patient's feet rest firmly against it at right angles with a free space under his heels. A towel or blanket is placed under the knees and tucked under the knees — preventing hyperextension of knees and external rotation of legs. Patients are not allowed to twist or roll or use hands or arms, if shoulders, arms and abdominal muscles are involved.

The limbs should be allowed to remain in their natural positions between exercises. This position is approximately the position of the body when a standing pose is maintained with the feet slightly apart and the hands at the sides. In this position all muscle fibers are practically at rest, with no undue stretching or contraction.

When the limbs are placed in the posture they usually occupy, they are in the "zero positions" from which a range of movements in various directions may be accomplished.

The posture described is maintained, as far as possible, for the major portion of the twenty-four hours. A prone position is substituted for periods of one hour during the daytime.

To prevent prolonged maintenance of one posture, the patient is turned over at intervals and lies prone with his feet over the end of the mattress. Patients who have been alternately turned from the supine to the prone position, do not develop visceral complications. All pressure, especially on bony points, is carefully avoided. The heel should not rest on the mattress. The wards in which these patients are placed are kept unusually warm (which is trying on the nurses and physical therapists).

She treats her bulbar cases by hot fomentations to the back of the neck and to the pectorals, around the neck and covering the sternocleidomastoids.

In regard to the respirator Kenny states: "In my experience, I have failed to see where the respirator is of any benefit and it may in many instances debar the patient from making a satisfactory recovery." She describes her procedure in one case. "We then proceeded to endeavor to restore the brain path. The patient was requested to inhale and expand the thorax, and exhale and contract the intercostales interni, the attendant assisting by gently depressing the floating ribs in the latter movement. In less than half an hour the patient's breathing had improved, and within two hours it was considerably easier and much less rapid. Continuous hot packs were applied to the full length of the spine and renewed constantly whenever the patient complained of their feeling cold. This varied from five minutes to half an hour for the first four hours. The patient was placed in any position she desired."

MUSCLE REEDUCATION

A. Objectives
   a. To overcome mental alienation
   b. To establish coordination
B. Methods of muscle reeducation to produce normal functional activity
   a. Relaxation — "Dead Dog" policy — Do nothing
   b. Muscle stimulation
   c. Passive movements and exercises
   d. Directed active movements and exercises

Reeducation is her method of teaching the patient mental concentration. Her emphasis on maintaining normal muscle rhythm and developing coordination from the beginning of treatment, merit much commendation. (figure 4.)

Later treatments include: Physiological stimulation of muscles; Concentration of attention and effort on the insertion of muscles; Avoid-

ance of substitution of muscle power.

MENTAL AWARENESS

Kenny believes that the subconscious mind will reconstruct and rearrange itself to accept all changes as permanent, and deliberate, thereby establishing a condition of incoordination. For example, when abduction is desired, the adductors will contract and attempt to assist in abduction. To prevent this substitution of muscle function the patient is directed to focus his mind on the point of insertion of the muscle or tendon to bone.

All hinge joints are stabilized by muscles coming under the second classification, i.e., muscles that are removed from their normal resting length before a satisfactory contraction can occur. For instance, the psoas muscle will flex the thigh forward. The head of the femur is rotated backward. On the other hand, to rotate the head of the femur forward, the hamstrings will lift the thigh and leg in extension and support it.

The quadriceps must be removed from its normal resting length to allow it to contract and perform a useful movement and stabilize

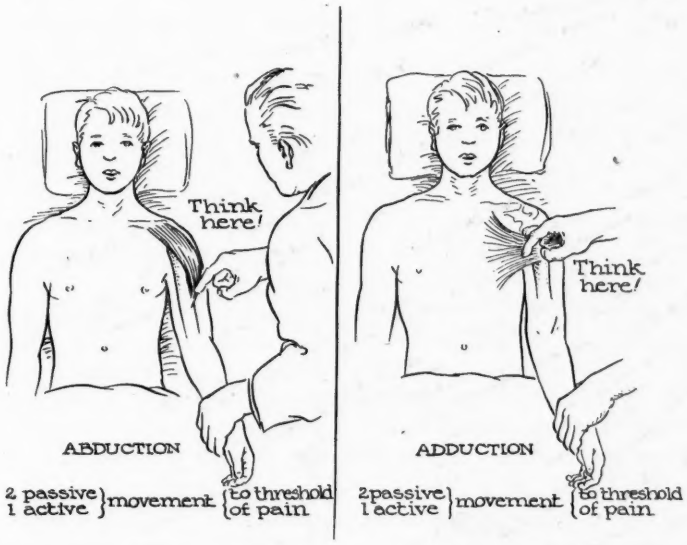

Figure 4. — Muscle reeducation. Left — for deltoid. Right — for pectoralis major.

CLASSIFICATION OF MUSCLES

In the classification of muscles according to the Kenny system, all muscles causing inward rotation of a joint contract within their normal resting length to perform this action. Therefore, to shorten them means an eventual limitation of this movement, either in flexion (the psoas muscle) or abduction (the gluteus medius) in the lower limbs, or shortening (the deltoid) in abduction, and (the coracobrachialis) in flexion of the upper limb.

the lower limb and prevent the hinge joint from collapse during weight bearing. The gluteus maximus will then contract and stabilize the limb in the position of extension. The same law applies to the triceps during full extension of the upper limb. The triceps also must be removed from its normal resting length before a useful contraction can occur. The brain path must be kept in this routine, whatever degree of paralysis has occurred. In many cases the joints have been removed from the normal resting place, from which stationary point, normal

articulations are expected to occur. For instance, the head of the humerus resting in the glenoid cavity is rotated in its cavity in order that a certain degree of abduction be obtained. This procedure interferes with the capsular ligaments, shortens some muscles, stretches others, and interferes with the proprioceptive reflexes. Much harm is produced where shortening occurs in muscles that contract and cause the rotation of the head of the bone in a ball and socket joint, either by spasm from the disease or deliberate shortening by abduction.

PHYSICAL THERAPY

The treatment is practically all physical therapy with mind muscle training or mind-muscle training, mind direction, mind concentration enhancing the value of the physical measures.

MUSCLE CONSCIOUSNESS

Meticulously precise muscle training is carried out. She makes the patient conscious of the insertion of the muscle. It is imperative that the physical therapist be an expert muscle anatomist. Patients in the acute stage are worked with twice daily. One to three contractions of each muscle is the rule; 2 passive and 1 active. Kenny emphasizes coordination rather than developing muscle strength. She strives to maintain normal length of tendons. She employs no massage because she believes it increases spasm.

In order to prevent or correct harmful muscle incoordination she prevents or corrects the substitution of muscle function.

She emphasizes mental awareness in the reeducation of muscle function.

Routine muscle testing or examinations in the generally accepted sense are not permitted.

She emphasizes that no "muscle in spasm" should be irritated by active or passive movements. She does not start any muscle reeducation until all muscle spasm has been abolished. She has a remarkable ability to get patients of all ages "to relax," i.e., "to do nothing." Before a muscle is directed to perform a movement, the physical therapist strokes the skin over insertion of the muscle several times, in order to get the patient to concentrate on the insertion, at which location the muscle and tendon will perform their functions. The normal mental approach to these patients is one of her strong points.

Her first thought is to make the patients muscle conscious. She uses extreme care in teaching and executing the exercises. She insists upon mental as well as physical cooperation of her patients. She does not use the respirator. She is an expert in teaching apparently hopeless patients how to breathe. She claims the sternocleidomastoid and the trapezius are the chief causes of inability to breathe in these cases and by relaxing the spasm of those muscles she can then begin to teach them how to breathe.

SPECIAL EXERCISES

Exercises are given back-lying, face-lying, sitting, or standing — never in the side-lying position.

She makes a muscle analysis on her daily rounds. In her muscle reeducation she teaches the patient to render his healthy muscles inactive while he tries to use his paralyzed ones. She stimulates the muscles physiologically through their tendons and the proprioceptive system. The physiological stimuli are initiated by fixing the patient's attention on the insertions of the muscles and tendons thereby preventing and correcting the substitution of muscle function. See figure 4.

Gentle passive exercises are carried out, but never to the point of pain. These are performed during the first two days of the sensitive stage. The patient's activities are directed to the area of the tendon where movement is to be expected. The physical therapist passes her fingers over the skin along the course of the tendons and insertions of the muscles in a stroking maneuver in order to enhance the power of concentration.

PHYSICAL UNIT

A standard physical unit will simplify the application of the Kenny method especially in a hospital where several patients are under treatment at one time.

Components: Trained personnel, Equipment.

Personnel: Doctor, Physical therapist, Nurses, Orderly.

Additional Personnel Desirable: Pediatric Resident Doctor, Orthopedic Resident Doctor.

Equipment:

Bed — fracture bed	Wool strips
Foot board	Impervious material
Portable wash tub	Pins or clips
Sterilizer	Hot water bottles
Hot water	Electric bulbs
Heater	Electric cradles
Wringer	Warm room or ward

Specific Equipment Desirable: Portable washing machine, Electric heating unit, Automatic electric wringer.

The equipment will vary according to the local situation such as:

A unit for a quarantine ward of a hospital
A unit for the general ward of a hospital
A unit for treatment in a poor home
A unit for treatment in a well-to-do home

COMPONENTS OF UNIT FOR HOT FOMENTATIONS

I. Portable washing machine.
Ordinary washtub on a truck with rubber wheels.
Foot delivery unit to raise the foments to level of wringer rollers.
Buckets like scrubmen use in large buildings.
II. A wringer attached to tub.
Automatic electric wringer or foot control.
III. Means of keeping water very hot.
Electric heating units with thermostatic control.
IV. Woolen strips and swathes of blanket material.
V. Pan for complete foments in a warm compartment ready for use.
VI. Some poles or sticks like the washer women use or long forceps.
VII. Water proof materials.
VIII. Large sterilizer to boil fomentations if they are used on more than one patient.

KENNY'S RESULTS

Her results have so impressed many responsible medical men that they have publicly announced that Miss Kenny's treatment for infantile paralysis in the acute stage holds more hope for recovery than any other teratment.

There is no doubt that her treatment abolishes pain and stiffness and minimizes the occurrence of deformities. It prevents contractures, lessens the degree of paralysis and, by treating the symptoms which appear in the acute stage, procures a higher percentage of full recovery than any other method.

Among the most important practical benefits derived from this treatment are the rapid relief from pain and sensitiveness and the prevention of contractures.

Gross deformities either do not occur or are minimal.

Undesirable visceral disturbances are not evident. Contractures are absent.

During the period of isolation, all spasm should have been relieved by the hot packs. The advent of this period is evidenced by the abolition or disappearance of pain, tenseness, hardness, firmness and resistance to stretching.

The discipline of assistants and patients is excellent.

She does not baby her patients, she doesn't even baby the babies.

The children who are cured go through a beautiful physical exercise routine.

Dr. Wallace Cole's latest statement is, in effect, the Kenny treatment saves many hospital days; no deformity has appeared up to date; the general condition of the patients is better. They have no kidney involvement and he is sure but not able to prove, there is less residual paralysis.

In witness of some very strong claims I quote Cole and Knapp: "Thus far it would seem that this method may well be the basis of the future treatment of Infantile Paralysis."

Again, the same observers: "Early treatment has some value in preventing the development of severe paralysis. We believe that the paralysis is less severe than that which would have been expected ordinarily in nearly every case."

When the Kenny system is carried out from the beginning by a trained attendant none of the undesirable sequelae and complications are found to occur. One notes (1) better circulation and the skin in good condition. (2) Good abdominal and back muscles. (3) No deformities. (4) Muscles not contracted but even more flexible than in the average normal child.

One must consider the patient as well as his disability. My observations of her personally treated patients revealed that they were in better condition than any similar group I have seen anywhere in the world. These observations included general physical and mental conditions, central and sympathetic nervous systems, psychological reactions and the physical condition of the muscles, the circulation and the metabolism.

Naturally it is impossible to accurately evaluate end-results or to do more than indicate one's impressions because epidemics vary in their severity from year to year and no one can tell with any degree of accuracy the percentage of hospitalized patients who would have recovered completely under the usual treatment.

However, the Minnesota doctors think it is possible and appropriate to state definitely that Kenny's patients are much more comfortable and cheerful during the acute stage than are those patients who are immobilized. In addition they have seen absolutely no contractures or

deformities following her treatment. Even the most severely paralyzed patient has full range of passive movement in all of his joints. No scoliosis or other spinal deformity has developed in these cases and most of them are more limber than they were before they contracted the disease. The patients are more comfortable and more cheerful. Moreover Cole and Knapp believe that the paralysis is less severe than would be expected in nearly every case. Certainly no harm has resulted in any of the observed cases under Miss Kenny's care.

COMPARISON VS. CONTROVERSY

Comparison may be helpful; Controversy lends confusion; Confusion begets mistakes.

Comparison is made where it subserves elucidation, clarification and simplification.

Controversy is not entered into because it subserves confusion and error.

PREVIOUSLY ACCEPTED MEASURES (P.A.M.) CONTRASTED WITH KENNY METHOD (K.M.)

Dr. X. demonstrated some of his patients treated by previously accepted measures. Kenny demonstrated what could be considered comparable cases treated by P.A.M. and K.M. and showed conclusively the difference between the two cases.

In the patients treated by the P.A.M. there were deformity, contractures, limitation of movement and disability. In the cases treated by the Kenny method there were no contractures, no deformities, no stiffness or limitation of movements and almost no disabilities.

If it were not for the fact that Dr. X, a competent doctor especially trained in polio work had been present and stated that he had treated those patients she compared (treated the P.A.M.) — and those patients she treated, one would be inclined to pass the matter off with the statement that the cases were not reasonably comparable.

She demonstrated two patients — one who was put in a respirator but is now very badly crippled — and another which the local experts in physical therapy and orthopedic surgery considered highly comparable where the one treated by the K.M. was in execellent physical condition and in fact has won prizes for art work since her polio attack. She states that her "bulbar cases die like everybody else's, and there is no way of preventing it."

She makes a very strong point of non-paralytic infantile paralysis.

No kidney stones form because the patients move around.

She demonstrated two patients, one treated by Dr. X. and one by her. The doctor says the conditions were practically identical. His patient had a severe lordosis with a pot belly and scoliosis, as well as very poor posture. Hers had excellent body mechanics.

In Dr. X.'s case of the bad postural result, he thought that the abdominal muscles were weak. Miss Kenny proved to his amazement that it was the spinal muscles that were "in spasm" rather than the abdominals "in paralysis."

In the past, those cases of scoliosis where the muscles are hard and bunched up on the side of the convexity the condition has been called muscle spasm. The muscle spasm has been thought to be due to vertebral rotation. Kenny believes that the vertebral rotation is secondary to the muscle spasm.

She told me that two patients were sent into the hospital to go into respirators. She asked for the worse case. It was agreed by the medical men that the one assigned to her was the worse case. That patient recovered. The other patient was put into a respirator and died within 24 hours.

In an examination of a large number of her patients, I saw no cases of scoliosis or residual neck asymmetry. The shoulder muscles were well balanced. I saw no instances of pipe stem legs. There were no subluxated shoulders or hips in a group that would, according to the law of probability, have some. Not the least of the beneficial effects of the Kenny treatment is the high level of morale of the patient, doctor, nurse, physical therapist, nurse and especially the child's parents.

RESIDUAL PARALYSIS VS. DISABILITY

From an analytical point of view, it is evident that

If you can:

1. Abolish pain
2. Abolish spasm
3. Prevent contractures

4. Prevent gross deformities

You must naturally

5. Reduce disability

and finally it must follow that you have

6. Reduced the harmful effects of paralysis

TEACHING THE KENNY METHOD

If the largest number of persons are to benefit by Miss Kenny's valuable treatment, it must be possible to administer the treatment throughout the world, in fact it should be possible to properly carry out the technical parts of the treatment in every town in the country. It should be made available as soon as possible, to the whole country.

In the February, 1942, issue of the Foundation News (official publication of the National Foundation For Infantile Paralysis) under the title "Kenny Method to be Taught," Peter Cusack stated:

"This month President Basil O'Connor and Medical Director Dr. Don W. Gudakunst visited Minneapolis to consult with the medical authorities of the University of Minnesota and with Miss Elizabeth Kenny and her staff.

"As a result of this visit a program of instruction in the Kenny method is being arranged. Three groups well be afforded training at an early date:

1. Physicians in charge of special programs, such as directors of schools of Physiotherapy, orthopedic surgeons and those in charge of contagious disease hospitals.

2. Physical therapists in charge of either teaching programs or larger organizations.

3. Nurses in contagious disease hospitals or other institutions where there are either teaching programs or large groups of poliomyelitis patients being treated.

The number of trainees who can be admitted at any one time must depend on the number of patients in the early stages of infantile paralysis in the Minneapolis hospitals, as it is only the early stages that are treated by the Kenny method. Therefore, all doctors, nurses and physiotherapists should be warned they will be shown this method only after enrolling in one of the regular courses soon to be provided for that purpose.

Both the Foundation and the University of Minnesota are doing all that is humanly possible to spread knowledge about this method of treatment of the acute stage of the disease.

When the program has been formulated by the Foundation it will provide for its Chapters to utilize a portion of their funds to make this special training available. However, no steps should be taken until the complete program is announced."

It requires a minimum of six months to teach a nurse the Kenny technic.

The nurse and physical therapist must be expert muscle anatomists.

MANUAL ON KENNY TREATMENT

There is a dire immediate need for a concise manual containing the basic principles upon which Miss Kenny predicates her treatment and the details of her treatment during the acute stage of the disease. Such a manual is in preparation under the auspices of the National Foundation and will soon be ready for distribution to the medical profession.

SUMMARY

The Kenny treatment is one of the most outstanding advances in orthopedic surgery since the time of Hugh Owen Thomas and Sir Robert Jones.

It is evident to anyone who has carefully and impartially observed Miss Kenny or her trained personnel in the treatment of patients with infantile paralysis, that continuous rigid splinting is not only "on its way out," it is "out."

It is evident that if Miss Kenny is correct there is probably no such entity as paralysis of an individual muscle. If one accepts Miss Kenny's theory of intercostal muscle spasm, the respirator may be harmful.

After nearly two years follow-up study of the 54 cases treated in the Minnesota hospitals by Miss Kenny or by her trained assistants, the medical observers are emphatic in their statements that they have observed complete recovery of the muscles of the trunk, abdomen, back and neck. They have not seen the residual deform-

ities so frequently observed in a definite proportion of cases treated by other measures.

In a group of patients treated at another hospital in the Twin Cities, which was intended to form the basis for a controlled study, it was impossible to maintain a truly controlled study because the parents of the children having infantile paralysis refused to permit withholding the Kenny Treatment. Results in this series however, were definitely better than those observed under previously accepted treatment but were not as good as those treated by the Kenny Method at the Minneapolis General Hospital.

Not the least of the marvelous aspects of the Kenny Treatment is the fact that a child who has infantile paralysis can be given the benefit of physical treatment in a farm house — especially during the period of quarantine and more particularly during the first seventy-two hours of the illness. It is during the first few days that the hot fomentations afford their greatest relief from pain and stiffness.

Miss Kenny has taught the medical profession that there is a primary physical change in the affected muscles as well as in the components of the central nervous system. She has jarred the medical and allied professions out of their complacency into an immediate offensive attack on the local condition which she has so thoroughly proved exists.

In closing let me say that the Kenny Treatment is evidently the last word in the management of the acute stage of infantile paralysis. As new discoveries are made by clinical laboratory and research workers, the exact place for the Kenny Treatment will be determined automatically.

I think the Kenny Treatment will go down in history, but its components will be dissected, dispersed and absorbed in the huge and ever growing medical armamentarium.

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RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF ABNORMAL BLOOD CONDITIONS

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Disturbances involving the erythrocytes, leukocytes and platelets are often the first indication of a disease of the blood forming organs. Frequently the diagnosis of anemia, leukemia or thrombopenic purpura is made with no attempt to determine the type of anemia, the character of leukemic cells involved in the blood disorder, or the underlying cause of the purpuric state. The prognosis and treatment of hematological disturbances depend on an accurate diagnosis. Many diseases of the blood forming organs can be cured or the life of the patient prolonged several years following specific treatment or under proper supervision.

ANEMIA

Anemia is not a diagnosis. It is a symptom. Anemia indicates a decrease in the number of circulating erythrocytes or reduction in the amount of hemoglobin below the normal standard for the age and sex of the individual. This is purely a peripheral blood evaluation, since anatomically the erythroid tissue may be hypoplastic, normal or hyperplastic. This paradox is rather common in disease of the hematopoietic organs. The anemic state is the result of one of three causes, (1) a loss of blood from hemorrhage, (2) increased blood destruction, or (3) decreased blood formation.

In recent years the classification of anemia based on the size and hemoglobin content of the average erythrocyte has proven more satisfactory from the standpoint of treatment than the complicated classifications used in the past. From the hemoglobin, erythrocyte and hematocrit determinations an anemia is classified as macrocytic, normocytic, microcytic or hypochromic in type.

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DETERMINATION OF THE TYPE OF ANEMIA

Type of Anemia	Mean Corpuscular Volume C.M. (cubic microns)	Mean Corpuscular Hemoglobin- (micromicrograms)	Mean Corpuscular Hemoglobin Conc. (percent)	Cell diameter (microns)
Macrocytic	94 and over	more than 27	32-36	8.0-10.0
Normocytic	82-94	27-31	32-36	*7.5
Microcytic	80 and lower	less than 27	30 or higher	6.0-7.0
Microcytic and Hypochronic	80 and lower	less than 27	29 or less	6.0-7.0

*In familial hemolytic icterus, 5.0-7.0 microns.

The classification of the anemias based on the size and hemoglobin content of the red blood cell is of assistance in the diagnosis, prognosis and treatment of many diseases associated with anemia. Four types of anemia are distinguished: (1) macrocytic anemia. All cases in which the mean corpuscular volume is greater than 94 cubic microns and the mean corpuscular hemoglobin concentration is approximately 30 percent. This group is represented chiefly by pernicious anemia, sprue etc. Liver extract and stomach preparations are used in the treatment of pernicious anemia and some related anemias; (2) normocytic anemia. Cases of anemia in which the corpuscular volume is between 80 and 94 cubic microns and the mean corpuscular hemoglobin concentration is 30 percent or greater. This group includes cases of acute blood loss, aplastic anemia etc. The treatment of the cause, blood transfusions and attempts to stimulant formation of blood are the methods to follow in this group of anemias; (3) Simple microcytic anemia. Those cases in which the mean corpuscular volume is less than 80 cubic microns and the mean corpuscular hemoglobin concentration is 30 percent or higher. In this group is found the majority of the anemias associated with chronic infections and toxic processes. Discovery and removal or treatment of the cause and blood transfusions are the important steps to follow in treating the anemias that occur in this group; (4) Hypochromic microcytic anemia. All cases in which the mean corpuscular concentration is 29 percent or less, whether the mean corpuscular volume is greatly or little reduced or even actually normal. In this type of anemia there may be little or no reduction in the erythrocytes. Nevertheless the red corpuscles usually are found to be very small and poorly filled with hemoglobin. Idiopathic hypochromic anemia is representative of this group. Correction of the cause and large doses of iron produce spectacular results in the iron-deficiency anemias that occur in this group.

Macrocytic Anemias include pernicious anemia in a relapse, cirrhosis of the liver, sprue, pregnancy, fish-tapeworm disease, aplastic anemia, acute leukemia, pellagra, hypothyroidism, carcinoma of the stomach, metastatic lesions of the bone marrow, lymphoblastomas, agranulocytosis nephritis, coeliac disease, sickle-cell anemia, Cooley's anemia and erythroblastosis.

Pernicious anemia is the most common macrocytic anemia seen in general practice. It occurs late in life. There is a marked pallor and the patient complains of extreme weakness. The three important steps in the diagnosis are (1) neurological examination, (2) gastric analysis, (3) detailed hematological studies, including sternal marrow aspiration in doubtful cases. The patient complains of numbness and tingling of both hands and feet. One of the earliest neurological findings is a loss or diminution of the vibration sense. Advanced cases present neurological symptoms and findings due to subacute combined degeneration of the spinal cord. There may be absent knee or ankle jerks and disturbances in position sense and in co-ordination. Less frequently exaggerated reflexes with a positive Babinksi occurs. Anemia may be lacking in some of these cases with advanced neurological changes. Analysis of the gastric contents aids in the diagnosis in some doubtful cases, as achlorhydria is practically a constant finding in pernicious anemia, even following the subcutaneous injection of histamine hydrochlor-

ide solution. The red blood count in a relapse may be a million or less; more often it is found to be at a level of about 2.0 million. The hemoglobin percentage is higher than the percentage of erythrocytes. The white count in pernicious anemia is low (leukopenia) with a relative increase in the number of small lymphocytes. The erythrocytes show marked variations in size (anisocytosis) and changes in shape (poikilocytosis). Many of the large red blood cells are oval (megalocytes). The red cells are fairly well saturated with hemoglobin, so that pernicious anemia is a macrocytic and hyperchromic anemia. Young red blood cells, such as normoblasts occasionally appear in the peripheral blood. The granulocytes show a shift to the right-polymorphonuclear neutrophiles with many thin elongated lobes. These cells are called pernicious anemia neutrophiles.

There is also a moderate shift to the left to include metamyelocytes and myelocytes. The blood platelets are reduced in number. A polymorphonuclear leukocytosis in an untreated case of pernicious anemia indicates the presence of an infection. The intramuscular injection of adequate amounts of liver extract is the method of treating cases of pernicious anemia. The dosage and the interval of liver injection is determined by the response in the individual patient. It is very important to explain to the patient with the disease the necessity of continuing treatment throughout life. The blood findings in a complete remission are normal. It can not be too strongly emphasized that the only criteria of adequate treatment in pernicious anemia is one based on the red blood cell size — mean corpuscular volume or Price-Jones curve. Clinically a patient with the disease with a red blood count of 4.5 millions per cubic millimeter may feel well, yet hematologically he may reveal a macrocytic red cell (mean corpuscular volume of over 100 cubic microns). Such a case requires more antipernicious anemia substance in the form of liver extract. Patients with pernicious anemia may be suffering from cancer, syphilis, diabetes mellitus, hypothyroidism, hypertension, cardiac disease, nephritis, arthritis, etc. These complications when present in an individual with pernicious anemia should be treated along with the anemia. Complicating factors may require larger amount of liver extract than is normally necessary to sustain the patient in a complete remission. Large doses of vitamin B are required in cases with nervous system changes. Only rarely is dilute hydrochloric acid and iron necessary in this disease.

The bone marrow hyperplasia in pernicious anemia is due to a proliferation of megaloblastic cells and to abnormalities of the leukopoietic tissue. Megaloblasts, which are never seen in normal marrow require some form of anti-pernicious anemia principle for their maturation and probably for their suppression in order that the normal erythroid tissue may function. This is reflected in the peripheral blood by a decrease in the average red cell volume from 100 cubic microns or more (macrocytic) to an average red cell volume of 86 cubic microns (normocytic).

The other macrocytic anemias in this group can be differentiated by a careful history; complete physical examination; selected laboratory procedures such as detailed study of the cellular elements of the blood, reticulocyte counts, icterus index, blood chemistry, urine and stool examinations, liver and kidney function tests, gastric analysis, basal metabolic rate, fragility test, roentgenological examination of the lungs, bones and gastro-intestinal tract; biopsy of a lymph node and sternal marrow aspiration. Sickle-cell anemia is rarely macrocytic in type. It occurs in persons of negro ancestry. The typical sickle cells are demonstrated in moist coverslip preparations.

Sternal aspiration will aid in differentiating pernicious anemia from carcinoma, lymphosarcoma, multiple myeloma, leukemia and aplastic anemia.

Aplastic anemia is more often normocytic than macrocytic in type. The anemia is either primary or secondary in character. The cause of the primary type which usually occurs in young individuals is unknown. There is an extreme waxy pallor. Enlargement of the lymph nodes, spleen or liver is not present. The hemoglobin, erthrocytes, leukocytes and platelets are uniformily reduced. The reticulocyte count and icterus index are low. The granulocytes are reduced in number and show "toxic" changes. This is a sign of a secondary infection. The number of normal small lymphocytes are increased. With ulcerating lesions of the oral

cavity, aplastic anemia is often wrongly diagnosed as primary agranulocytosis. Because of the bleeding tendency and purpura manifestations cases of aplastic anemia are incorrectly diagnosed as essential thrombopenic purpura hemorrhagica. Sternal marrow aspiration will show a hypoplasia of all the bone marrow elements. Some patients have a hyperplastic bone marrow with an "aplastic" peripheral blood pattern. This state of affair is often called "pseudo-aplastic anemia". The prognosis is fatal in aplastic anemia and blood transfusions are of temporary value. As long as the granulocytes and platelets are prevented from falling below the critical level, the patient can be carried along for many months on frequent blood transfusions. Intramuscular liver extract, yellow bone marrow concentrates and capsules and leukocytic extract may improve the blood picture. A case of polycythemia vera is an ideal "blood bank" to have around for treating cases of aplastic anemia.

Secondary aplastic anemia is caused by chemical and physical agents such as X-ray and radioactive substances; systemic diseases such as nephritis, metastatic carcinoma, sarcoma, Hodgkin's disease and lymphatic leukemia which either destroy, or invade and replace the normal bone marrow elements. A history of the above, physical examination, laboratory data, hematological studies, gland and bone marrow biopsy may be required for an accurate diagnosis. The treatment except for the temporary value of blood transfusions is unsatisfactory in this group of conditions.

Sprue anemia, Coeliac disease, diphylobothrium latum and the macrocytic anemia of pregnancy are often benefited by intramuscular liver extract in conjunction with other therapeutic agents such as an adequate diet, vitamins, viosterol, iron, calcium etc.

It is well to remember that although pernicious anemia is macrocytic in type during a relapse, not all diseases with a macrocytosis are cases of true megalocytic pernicious anemia. Liver extract is a specific treatment for pernicious anemia. This is not true for many diseases which are associated with a macrocytic anemia.

Normocytic Anemias include the anemia of acute blood distruction, acute blood loss, sickle-cell anemia, familial hemolytic jaundice, myelophthisic anemias, splenomegalic anemias, infections, deficiency diseases, nephritis, aplastic anemia, anemia of pregnancy, and chronic non-inflammatory diseases. Several of the more important normocytic anemias will be discussed.

Hemolytic anemia is either intrinsic or extrinsic in character. The intrinsic anemias include congenital and acquired hemolytic anemia, sickle-cell anemia and probably Cooley's anemia and erythroblastosis. A hemolytic anemia is sometimes seen associated with neoplasms, Hodgkin's disease, leukemia, liver diseases and infections. A rare type of chronic hemolytic anemia characterized by nocturnal hemoglobinuria is Marchiafava-Micheli syndrome.

Congenital hemolytic jaundice is characterized by an anemia, a palpable spleen, an increased number of reticulocytes and a lowered resistance of the erythrocytes to hemolysis in hypotonic salt solution. The course of the disease is chronic with remissions and relapses. The patients are more yellow than sick. The hemoglobin and red blood cells are reduced, but the white count is normal during a relapse. There is marked polychromasia — that is red cells that stain light blue or intense slate blue. These cells when stained vitally by brilliant cresyl blue, show minute granules or skeins of basophilic material. They are reticulated or immature erythrocytes. The red blood cells are spherical and small in diameter measuring 5 to 7 microns (normal 7.5 microns). Many of these patients develop gallstones. Splenectomy results in a clinical cure.

Drugs, chemicals and certain parasites and bacteria produce a hemolytic anemia. The acute hemolytic anemia that occurs during the administration of sufanilamide and allied drugs produce a rapid and progressive drop in the hemoglobin and erythrocytes, a reticulocytosis and a myeloid immaturity in the peripheral blood. Normoblasts may enter the peripheral blood due to toxic action of the drug on the bone marrow. The bone marrow shows a marked hyperplasia of the normoblastic tissue in all the hemolytic anemias secondary to increased red blood destruction. This takes place within the body and the principle products of the erythrocyte (hemoglobin with its iron) are retained. The accelerated erythroid activity in the bone marrow

in one case (acholuric jaundice) decreases upon the removal of the spleen and in another when the hemolytic agent is removed (sulfanilamide etc.)

The treatment of many of the hemolytic anemias is at the present time unsatisfactory. The following factors should be considered in attempting to determine the cause of a hemolytic anemia; careful history with special reference to congenital factor; inquiry as to the intake of drugs, or exposure to agents known to produce a hemolytic anemia; blood cultures, blood agglutination tests, cultures of the throat; sputum, urine and stool examinations; blood chemistry; liver and kidney function tests; roentgenological examinations of the chest, gastro-intestinal tract, kidney and bones; blood Wasserman reaction; fragility of the red blood cells; detailed hematological studies including reticulocytes, examination for sickling phenomenom, search for parasites (malaria, etc.), and red cell diameters and thickness; sternal marrow aspiration and gland biopsy; icterus index or Van den Bergh test for increased bilirubin in the blood stream, quantitative stool urobilinogen determination, Donald-Landsteiner test when hemoglobinuria is present and Ham-Dingle test for nocturnal hemoglobinuria.

Simple Microcytic Anemia is found in subacute and chronic inflammatory diseases, chronic non-inflammatory diseases and occasionally in nephritis and pregnancy. Arthritis, plumbism, malignancy without loss of blood, pulmonary tuberculosis and other infections of the lung, syphilis, congenital hemolytic anemia, unexplained fevers, Addison's disease, etc. are a few of the conditions in this group. Blood cultures and blood agglutination tests for typhoid fever, paratyphoid fever, undulant fever, typhus fever and tularemia; blood Wasserman reaction; congo red test (possible aid in diagnosis of amyloidosis); hematological studies including examination for reticulo-endothelial monocytes (aid in subacute bacterial endocarditis) are a few of the tests to be used in attempting to arrive at a diagnosis.

The red blood cells in this type of anemia show a moderate microcytosis and little or no hypochromasia. The white count may be low, normal or there may be a polymorphonuclear leukocytosis with so-called "toxic" neutrophiles that can be found in almost any kind of infection, particularly acute infections. One can get a good idea of the prognosis by studying the number of these cells and noting the so-called shift to the left. In general, the more marked the shift to the left the poorer the prognosis. The blood pattern may simulate that seen in myelogenous leukemia and the term leukemoid reaction is applied to differentiate it from genuine leukemia from which the patient never recovers. Young red cells such as normoblasts may appear in the peripheral blood. The blood platelets are normal or slightly increased in number. In the hands of an experienced observer the examination of the bone marrow is of diagnostic and prognostic value in some cases of simple microcytic anemia.

As long as the cause of the anemia is present, treatment with liver extract, iron and other medical agents are of little value. Blood transfusions will carry the patient along until the cause has been treated and eliminated.

Hypochromic Microcytic Anemia: Hemoglobin deficiency is the feature of hypochromic anemia. This anemia due to iron deficiency results from inadequate intake of iron from the food; loss of iron from the body by blood loss and the demands of the body for iron for growth and pregnancy. Conditions in which an iron deficiency is observed are nutritional anemia of infancy, chlorosis, idiopathic hypochromic anemia, hookworm infection, iron deficiency anemia of pregnancy and the hypochromic anemia of infancy and childhood caused by the excessive demand for iron by growth and other secondary facts such as the diet and gastro-intestinal disturbances that interfere with absorption.

Examination of the stools for blood; roentgenological examination of the gastro-intestinal tract for malignancies and bleeding peptic ulcers; gynecological examination in cases of vaginal bleeding; dietary habits and examination for bleeding hemorrhoids are a few of the factors to consider in attempting to find the cause of the iron deficiency state.

The physical findings in the mild cases of iron deficiency anemia are pallor, dyspnea and a moderate degree of edema of the ankles. In severe cases the pallor is often striking and associated with extreme weakness.

Examination of the blood reveals a reduction in the hemoglobin percentage greater in extent than the blood red cells which may approach normal. This results in a red cell smaller than normal and that has a decrease in the hemoglobin content. This microcytic hypochromic anemia is characteristic of all iron deficiency anemias. The total leukocyte count is normal, but it may be slightly increased. The platelets are increased and appear normal. Reticulocytes, polychromatic red blood cells and normoblasts may be present. This is a sign of regeneration. There are marked changes in size and shape of the erythrocytes with the presence of "pencil" shaped red blood cells. In severe cases a low white count with a decrease in the number of platelets is observed. The bone marrow despite the anemia is hyperplastic, the red blood cells being unable to mature properly until large doses of iron are given. Following the replacement of iron therapeutically the hyperplasia in the bone marrow returns to normal and the red blood cells become normal in size and in hemoglobin content.

There are many forms of iron which are effective provided a sufficient amount is given. The important thing in iron therapy is that an adequate supply of metallic iron be given to the patient the particular form in which it is given not being so important as the amount. Dilute hydrochloric acid should be given in those cases where there is an achlorhydria. Since most commercial iron preparations contain copper as an impurity there is no need for additional supply of this latter metal.

It is well to remember that in the male iron is required for growth; in the female for growth, menstruation, pregnancy and lactation. Iron deficiency anemia is more apt to occur during this phase of life, especially in infancy and at puberty. The microcytic hypochromic anemia due to loss of blood may occur at any age in either the male or the female. In the treatment of iron deficiency anemia a well balanced diet with adequate supply of protein and vitmains is essential. Unless the cause of the bleeding is eliminated or corrected the response of the anemia to iron therapy will be poor.

A type of microcytic hypochromic anemia which is limited to women and which is characterized by difficulty in swallowing, chronic inflammatory and atrophic changes in the mouth, pharynx and upper end of the esophagus is called Plummer-Vinson syndrome. In addition to the anemia and dysphagia the nails may turn spoon shaped and at times, there is no free hydrochloric acid in the stomach. Large doses of iron lead to improvement.

Some primary disturbances of the hematopoietic organs are associated with a microcytic hypochromic anemia as for example Latent Mediterranean disease and congenital microcytic hypochromic anemia. Such anemias fail to respond to iron therapy.

ENLARGEMENT OF THE LYMPH NODES AND SPLENOMEGALIES

The most common cause of localized lymphadenopathy is acute and chronic infections of the head and neck. Infections of the upper respiratory tract cause a chain of small, discrete, at first soft, later hard nodes in the anterior or posterior cervical region either unilateral or bilateral. The submaxillary, sublingual and postauricular lymph nodes are also variously involved. The blood examination here usually reveals no sign of an anemia in the acute stage unless anemia was present prior to the immediate infection. The white count is elevated and shows a preponderance of granulocytes with various degree of toxic shift to the left. Some infectious diseases produce a leukopenia.

Malaria, influenza, typhoid fever, pertussis, tuberculosis and syphilis which may also have associated with it an enlarged spleen, can react with an increase in the number of lymphocytes.

A frequent cause of enlarged lymph nodes of the neck in young adults is acute infectious mononucleosis or glandular fever. The symptoms most commonly encountered are sore-throat, headaches, nausea and vomiting, abdominal pain, cough, coryza, sweating and stiff neck. Skin rashes and jaundice may appear. In children the signs of an upper respiratory infection predominate and a generalized lymphoid hyperplasia is a constant feature. In adults the abdominal symptoms are commonly observed.

The average temperature in infectious mononucleosis is 101° F. but it may reach 105° F. Because of the headache and stiff neck, meningitis is often diagnosed. The diagnosed is cleared up by a blood examination. The hemoglobin per-

centage, red and platelet counts are normal. The total white count is at first low (4000) and later reaches about 20,000. The large number of atypical lymphocytes (not monocytes) which are never seen in normal blood are diagnostic for this disease. Sternal marrow aspiration will rule out any suspicion of a leukemia. The "heterophile antibody test" which tests the behavior of the patient's serum towards sheep's corpuscles substantiates the diagnosis. A false-positive Wasserman reaction occurs in some cases. These patients should not be treated for syphilis. Diet and general measures such as appropriate for any upper respiratory tract infection are indicated.

In most instances a generalized progressive enlargement of the lymphoid tissue speaks for a malignant neoplastic disease. A practically normal blood finding in an individual with enlargement of the lymph nodes is suggestive of Hodgkin's or lymphosarcoma. These two conditions fall in the group of diseases called "lymphoblastoma" which include lymphatic leukemia and mycosis fungoids. A gland biopsy is required for a final diagnosis. In some cases of lymphosarcoma, the sarcoma cells may be aspirated from the sternal marrow. Anemia and other blood findings which are not diagnostic occur late in these malignant diseases. Cases of lymphosarcoma, spontaneously or following roentgen therapy may be converted into a condition called "leukosarcoma." The malignant cells invade the bone marrow and replace the erythroid, myeloid and megakaryocytic tissue. This results in a secondary aplastic anemia. Roentgen treatment is of temporary value in the lymphoblastomas.

The leukemias may be divided from a clinical point of view into acute and chronic, leukemic and subleukemic types. Cases which live six months or less are said to be acute and the rest are called chronic. Subleukemic is used when the total count is low or practically within normal limits. Several types of leukemia are recognized, (1) Lymphatic type in which there is a generalized lymphoid hyperplasia and disordered lymphocytic formation. (2) Myelogenous type which is a disorder arising in the bone marrow and characterized by hyperplasia and abnormalities of the granulocytic formation. (3) Monocytic leukemia which is characterized by the appearance of normal and immature monocytes in the peripheral blood and a hyperplasia of the reticuloendothelial system.

Miscellaneous group of leukemias include, eosinophilic leukemia, basophilic leukemia, megakaryocytic leukemia, acute stem cell leukemia, chloroma, erythroleukemia, plasma cell leukemia and luekosarcoma. With the exception of plasma cell leukemia and leukosarcoma, all the others in this miscellaneous group are variants of myeloid leukemia.

The monocytoid blood pattern that occurs in cases of myeloid leukemia should not be confused with the blood picture of true monocytic leukemia. In the former condition the monocytes are derived from the myeloblast (Naegeli type), whereas in the true type of monocytic leukemia the monocytes develop from the reticulum (Schilling type).

The bone marrow in all the leukemias is hyperplastic and filled with cells corresponding to the type of leukemia. These cells are often immature and atypical in form.

The basal metabolic rate is elevated. Increased blood uric acid is a sign of increased destruction of leukemic cells with the release of the nucleic acid. Roentgen ray often reveals bone changes and infiltration of the lung tissue. The icteric index is occasionally increased with the development of a hemolytic anemia. The clotting time is normal, but during the purpuric stage with a reduction in the number of platelets, the bleeding time is prolonged.

The most common complaints in chronic myelogenous leukemia are fullness of the abdomen, pain in the upper left quadrant, the discovery of a large mass in the left side of the abdomen, increased weakness, pallor, difficulty in breathing on exertion, loss of weight and bleeding. Massive hemorrhage may follow the extraction of a tooth. Slight impairment of hearing may occur, and in rare instances deafness with Méniére syndrome of tinnitus and vertigo may develop. Retinal hemorrhages are common. Neurological symptoms and findings due to infiltrations of the leukemic cells into the brain and spinal cord are frequently observed.

In the chronic lymphatic variety the symptoms are similar to the above except that the complaints due to lymphatic node enlargement replace those due to an enlarged spleen. The phys-

ical findings include enlargement of the liver, spleen, lymph nodes, pallor and findings anywhere in the body due to leukemic infiltrations and hemorrhage.

The findings in monocytic leukemia vary. The lymph nodes and spleen are less often enlarged and ulcerations of the oral cavity and lesions of the skin are frequently seen in this type of leukemia.

When leukemic cells invade the skin, the condition is called leukemic cutis. The appearance of specific skin lesions in chronic myeloid leukemia is a sign of an early fatal outcome.

Fever, prostration, pallor, slight enlargement of the lymph nodes, spleen, liver, hemorrhagic manifestations, gingivitis, and ulcerations of the oral cavity are common findings in acute leukemia.

In the chronic form of the disease the hemoglobin and erythrocytes are reduced. The total white count in most cases is high, 100,000 or more. The blood platelets are either increased, normal or reduced. The blood smear in lymphatic leukemia reveals numerous uniform small lymphates. They made up 90 to 99 percent of the leukocytes. In monocytic leukemia most of the leukocytes are mature and immature monocytes. In myelogenous leukemia there is a tremendous elevation in the number of cells consisting of all varieties of immature granulocytes: myeloblasts, promyelocytes, myelocytes, metamyelocytes and mature neutrophiles. The degree of cellular immaturity, so called shift to the left, is an indication of the acuteness of the process. It can not be too strongly emphasized that the diagnosis depends on the qualitative change rather than on the quantitative change of the cellular elements.

In acute leukemia there is a rapid and progressive fall in the hemoglobin and red count. The anemia is often macrocytic in type. The white count varies, but it is frequently low (leukopenia). The platelets are reduced in number. The differential blood smear shows a preponderance of immature lymphocytes, myeloblasts or immature monocytes depending upon the type of leukemia.

Normoblasts, megakaryocytes and their fragments appear in the blood in all the leukemias.

A type of acute leukemia, practically limited to children, in which most of the leukocytes are "stem cells" or micromyeloblasts is often mistaken by an inexperienced observer for chronic small cell lymphatic leukemia. If x-ray treatment is given in such a case, death may suddenly occur.

In adults acute myeloid leukemia is the most common type of acute leukemia. Frequently in this type of leukemia, there is a condition of "hiatus leucaemicus" in which only myeloblasts and mature neutrophiles appear in the peripheral blood without any intermediate stages between the two. Acute leukopenic leukemia can be easily differentiated from idiopathic aplastic anemia and primary thrombocytopenic purpura hemorrhagica by sternal marrow biopsy.

All forms of leukemias are invariably fatal. An adequate diet, rest in bed during exacerbation; iron in large doses; liver; vitamins, especially the B complex; arsenic therapy in the form of Fowler's solution in chronic myeloid leukemia; roentgen therapy except in the acute and leukopenic phase and in monocytic type of leukemia; frequent blood transfusions and radio phosphorus (P^{23}) are all of temporary value in the leukemias.

Polycythemia vera is a progressive and ultimately fatal disease in which there is an excessive production of red blood cells (7,000,000 or more), a high percentage of hemoglobin, an elevated leukocyte and platelet count, an increased blood volume, an enlarged spleen and peculiar color of cyanosis of the face, lips, neck, mucous membranes, hands and feet. The blood pressure is normal or moderately elevated. Engorgement of the retinal vessels can be seen on ophthalmoscopic examination. Neurological symptoms and findings are common in this disease.

The blood is dark red, sticky and viscous. The blood smear examination may reveal a certain degree of immaturity of the granulocytic cells, and young red cells such as normoblasts. The bone marrow reveals a hyperplasia of the erythroid, myeloid and megakaryocytic tissue.

Treatment is directed toward reducing the total mass of circulating red blood cells. Repeated bleeding by venesection; diet low in iron content; arsenic in the form of Fowler's solution; hemolytic drugs, such phenylhydrazine or acetyl-phenylhydrazine; roentgen therapy; radio-phosphorus (P^{32}) and total thyroidectomy

with a resulting myxedema and anemia are the methods in general use.

Splenomegaly, with or without lymphadenopathy has been recorded in some 85 diseases. Enlargement of the spleen is observed in most diseases of the hematopoietic organs, in circulatory disturbances, infections, metabolic disturbances, primary tumors and in a number of unclassified conditions. By careful selection of the appropriate laboratory test in any given case, together with careful history and complete physical examination, one should be able to arrive at a correct diagnosis. Splenectomy is the treatment of choice in Hemolytic jaundice, primary thrombocytopenic purpura hemorrhagica, early phase of Banti's syndrome, thrombophlebitis of the portal and splenic vein, Felty's syndrome, and at times in Gaucher's disease, primary tuberculosis and tumors of the spleen. Splenectomy is contra-indicated in leukemia, aplastic anemia and Hodgkin's disease. The removal of the spleen in an individual with a hemolytic anemia in which the anemia is macrocytic in type and the diameter of red blood cells is greater than normal will in most cases have little or no effect on the disease. This type of hemolytic anemia is more common in children than in adults.

HEMORRHAGIC DISORDERS

The mechanism of abnormal bleeding usually involved one or more of the following factors, mainly (1) quantitative or qualitative changes of the platelets, (2) disturbances in the clotting mechanism and (3) increased permeability of the capillary wall.

In general three organs or tissues are primarily concerned in the hemorrhagic disorders. They are the bone marrow megakaryocytes which produce the blood platelets and in turn furnish the thromboplastin; the liver which supplies prothrombin, fibrinogen and heparin, and the blood vessels with their endothelial function and capillary reactions. The spleen is a disturbing factor in some thrombocytopenic states and the gastro-intestinal tract takes part in the mechanism of vitamin K formation and absorption.

A history of any familial or hereditary blood disease in the family; a review of recent contact with drugs; a thorough search for any dietary deficiency or allergic manifestation to foods, and inquiry as to recent contacts with any active or convalescent disease are important facts to note in attempting to formulate a working diagnosis in purpura conditions.

For the differentiation of the various types of hemorrhagic diseases there are necessary not only a full history, physical examination and the usual study of the blood, especially of the cellular elements, but in addition: (1) an accurate platelet count, (2) bleeding time, (3) coagulation time, (4) retractility of the blood clot, (5) determinations of the prothrombin time as evidence of a deficiency of vitamin K, (6) the capillary resistance test (Rumpel-Leede) and (7) bone marrow aspiration studies.

The classification of purpura conditions on the basis of the number of circulating blood platelets (thrombocytopenia and nonthrombocytopenia) and a classification based on defects in the coagulation mechanism of the blood aids in the diagnosis and indicates the type of treatment to follow in many of the hemorrhagic diseases. The capillary factor is a part of both classifications.

CLASSIFICATION AND TREATMENT OF HEMORRHAGIC DISEASE BASED ON THE NUMBER OF BLOOD PLATELETS

(1) *Thrombocytopenic Purpura — Essential or Primary (Werlhof's disease).* This disease is characterized by spontaneous bleeding into the skin or following the application of a tourniquet to the arm in order to obtain blood from a vein. Petechiae are usually scattered over the arms, abdomen and legs and bleeding may occur from the nose, gums and in some cases from the bowel, kidney and vagina. In females there is usually disturbances in the menstrual cycle. The bleeding time is prolonged and the coagulation time is normal with a poor or absent clot retraction. The blood platelets are absent or markedly reduced in number and they present marked variation in size and abnormalities in shape. The tourniquet test is strongly positive. Anemia when present is normocytic in type. The bone marrow reveals a megakaryocytic hyperplasia. This is the most important single differential diagnostic procedure.

Treatment: Untreated the disease is often characterized by a cyclic course of remissions and exacerbations. Therefore temporary or apparent

cures supposedly brought about through medical treatment should be viewed with this fact in mind.

Medical: High voltage roentgen therapy over the spleen or the exposure of cases of idiopathic purpura hemorrhagica to ultraviolet rays has many advocates. In females with marked vaginal bleeding temporary or permanent induced menopause by roentgen therapy over the ovaries will stop or decrease the amount of bleeding in some cases. This should be followed by splenectomy at an early date.

Snake venom in doses from 0.4 cc to 1.0 cc of 1:3000 (moccasin venom) is given subcutaneously twice weekly. Clinical improvement occurs without any improvement in the platelet level.

Parathyroid extract plus calcium gluconate has been given to the point of intoxication which is characterized by the symptoms of vomiting, progressive weakness, apathy and lethargy.

The elimination from the diet of foods to which the patient is allergic and the removal of offending drugs such as quinine, arsphenamine, benzene and sedormid which can act directly on the bone marrow megakaryocytes or cause depletion of the circulating blood platelets are important precautionary measures.

Transfusions supply lost plasma volume and red blood cells. The transfused blood platelets have little or no effect in reestablishing the normal platelet level and therefore should not be regarded as a curative measure. The blood transfusions serve to carry the patient along until a spontaneous remission sets in or as an operative measure prior to the removal of the spleen. Blood in amounts of 500 c.c. should be given when indicated rather than several small transfusions.

There is a large group of miscellaneous measures which are of little or no value in the treatment of this disease. They include the injection of foreign proteins, calcium, proprietary coagulants, epinephrine hydrochloride, viosterol, large doses of cevitamic acid, other vitamins such as K, P, B_2 and A, and endocrine extracts.

Surgical: Splenectomy apparently results in a complete cure. The removal of the spleen is contra-indicated in cases in which the bone marrow megakaryocytes are absent or markedly reduced. Splenectomy should not be delayed because of the danger of sudden fatal termination through cerebral hemorrhage.

(2) *Symptomatic or Secondary Thrombocytopenic purpura* is found in:

(a) Blood disease — Aplastic anemia, leukemia, pernicious anemia, sickle-cell anemia, hemolytic anemia, Hodgkin's and Gaucher's Diseases.
(b) Infections — sepsis, subacute bacterial endocarditis, typhoid, tuberculosis, meningitis, pneumonia, abscess of the lung, gangrenous pharyngitis, etc.
(c) Intoxications — benzol, arsphenamine, quinine, snake venom, mercury bichloride.
(d) Radiation — roentgen ray, radium, etc.
(e) Tumors, metastases and sclerosis of the bone marrow.
(f) Anaphylaxis
(g) Avitaminosis.

The treatment in this group of purpuric states is obviously that of the underlying cause. Liver extract in pernicious anemia, splenectomy in hemolytic icterus, chemotherapy in some of the infections, removal and elimination of toxic agents and vitamin C therapy in avitaminosis is the procedure to follow in certain selected cases in this group. Blood transfusion is of temporary value in many of the ultimately fatal blood dyscrasias in the above list of purpuras.

(3) *Nonthrombocytopenic Purpura*: This group includes —

(a) Anaphylactoid or allergic conditions — Schonlein-Henoch and erythemas of Osler.
(b) Chronic diseases — nephritic and cardiac conditions.
(c) Infections — scarlet fever, typhoid, etc.
(d) Intoxications — benzol, arsphenamine, iodine, snake venom.
(e) Avitaminosis — scurvy.
(f) Miscellaneous group — purpura simplex, fulminans, senilis, cachectica, mechanical and familial and hereditary purpura.

Treatment in the nonthrombocytopenic purpuras consists of eliminating and treating the cause and following the routine suggested under Symptomatic Purpura.

In the thrombocytopenic purpuras bleeding time is prolonged and the clot is non-retractile, but the coagulation time is normal. In the nonthrombocytopenic purpuras the blood is usually quite normal in all these respects. The capillary resistance test is positive in the first group and may or may not be positive in the second. Splenectomy is contra-indicated in both groups of

purpuras except in rare instances such as hemolytic icterus, Gaucher's disease, early phase of Banti's syndrome and Felty's syndrome.

The classification of hemorrhagic disorders due to abnormalities in the coagulation mechanism of the blood is best introduced by formulating the normal clotting mechanism:

(1) Prothrombin + thromboplastin + calcium = thrombin

(2) Fibrinogen + thrombin = fibrin

It is apparent that only four primary factors are required for the clotting of blood — prothrombin, thromboplastin, calcium and fibrinogen. A deficiency of any one of these, with the probable exception of calcium, will wholly inhibit or markedly delay the coagulation of the blood. According to Howell's theory a fifth substance, anti-prothrombin, an anti-coagulant is normally present and prevents the formation of a clot in the circulating blood. The presence of an anti-coagulant is doubtful. Following the work of Dam and many others it has been proven that prothrombin is formed in the liver from vitamin K. Vitamin K (from the Danish work "Koagulation") is present in the photosynthetic portions of certain plants and is produced by bacterial activity in the intestine of man. The vitamin has been prepared chemically — it belongs to the chemical group of Naphthaquinones and is now available for therapeutic use. Clinically, avitaminosis K is manifested by a tendency to bleed due to a lowered prothrombin level of the blood.

Classification of Defects in Coagulation Mechanism (after Quick)

I Diminished prothrombin (Prothrombinopenia)
- (1) Defect in the supply of vitamin K
  - (a) Absence of bacteria in intestine — hemorrhage disease of newborn
  - (b) Faulty absorption — lack of bile salts — obstructive jaundice, biliary fistula and sprue (disturbed fat metabolism)
  - (c) Liver damage — faulty utilization of vitamin K — post anesthesia liver damage — chloroform poisoning, acute yellow atrophy
  - (d) Defective formation or inactivation — toxic sweet clover disease of cattle.

II Deficiency of calcium ions (No clinical or experimental hemorrhagic disorders known which are attributable to changes of the calcium concentration)

III Deficiency of thromboplastin (thromboplastinopenia)
- (a) Diminished number of platelets — essential and symptomatic thrombocytopenia.
- (b) Qualitative defect in platelets.
  1. Hemophilia — increased resistance of platelets
  2. Congenital thrombasthenia

IV Deficiency of fibrinogen
- (a) Nutritional deficiency
- (b) Diseases of the hematopoietic system
- (c) Severe liver damage
- (d) Snake venom
- (e) Congenital defects.

V Presence of anti-coagulants in the blood (heparin)
- (a) Peptone shock
- (b) Anaphylactic shock

The correction or elimination of the underlying cause, the administration of vitamin K preparations, other vitamins such as C and B complex, Brewer's yeast, adequate dietary requirements, blood transfusions and substitutes, and a few of the therapeutic agents listed under symptomatic purpura, in general is the procedure to follow in treating many of the conditions classified above. Vitamin K should be given pre-operatively in cases of obstructive jaundice, in operations on the intestinal tract, particularly if liver damage is suspected regardless of a normal prothrombin level of the blood. If the prothrombin level of the blood is markedly reduced due to liver damage, vitamin K is probably useless. Blood transfusions should be given in conjunction with vitamin K in such cases. The vitamin can be given orally, intramuscularly or when mixed with saline it can be given intravenously. When bile is absent from the intestinal tract, bile salts should be given orally.

It will be noted from the above subject matter that a number of the hemorrhagic diseases are of a mixed type, that is partly vascular and partly involving defects in the coagulation mechanism. The former abnormality is always present in the purpuras, otherwise bleeding would not occur. The nature of the defective endothelial structure in purpura hemorrhagica has not been demonstrated.

The presence of adequate amount of ascorbic acid in the body is essential for the proper formation of the "cement substance" between the endothelial cells of the capillary wall. A deficiency of ascorbic acid results in scurvy.

In hemophilia the prothrombin is normal, even though the clotting time is prolonged. This is due to the fact that in this disease, the platelets are abnormally resistant and therefore yield thromboplastin too slowly to bring about coagulation within the normal time. The clot retraction and blood platelets as well as the cellular elements are normal. Anemia when present results from excessive bleeding.

Hemophilia is a hereditary disease characterized by the transmission of sex linked recessive Mendelian defect, repeated hemorrhages throughout life, occurring only in males, and transmitted by females and affected males. The hemorrhages may be spontaneous, or they may be initiated by some type of trauma. Bleeding may occur into the joints which is usually followed by varying degrees of bone destruction and deformity. Absolute rest and repeated blood transfusions are the methods of treatment.

Abnormal bleeding is due to many factors. It is therefore imperative to determine the underlying cause of the bleeding process before therapy is instituted. This is especially true in essential thrombocytopenic purpura, a disease in which splenectomy results in a cure. Many failures from splenectomy in cases diagnosed "purpura hemorrhagica" have occurred because of incorrect diagnosis.

Ulcerative Lesions of the Oral Cavity and Other Mucous Membranes: Ulcerative lesions of the oral cavity and other mucous membranes are a common finding in a group of conditions called granulocytopenia or agranulocytosis. Granulocytopenia is classified as primary or secondary.

The primary type is characterized by a marked reduction in the white count (leukopenia) and a few and sometimes no granulocytes (neutropenia) on blood smear examination. The other blood elements are not effected. The symptoms usually come on suddenly with marked muscular soreness all over the body, a high fever and chills. The patient feels extremely ill and looks toxic. The lymph nodes of the neck are frequently enlarged. Soreness of the throat becomes most prominent and as the disease progresses ulceration and necrosis of the mouth and pharynx occurs. These lesions may occur in the mucous membranes of any part of the body. The pharynx appears diffusely purplish red, thus differing from the bright red and streaked throat of acute tonsillitis. This suggests breaking down of the tissue in the absence of polymorphonuclear neutrophiles. Edema of the throat develops rapidly followed by difficulty in breathing, drowsiness and even delirium. Toxemia, heart failure and death usually occur in from 24 hours to one week.

A chronic and cyclical form of this disease exist. The mortality rate in the acute cases in some series is as high as 90 percent. Among the causes of granulocytopenia are drugs, fatigue, menstruation and infection. The drugs include amidopyrine, dinitrophenol, arsenicals, gold salts, sulfanilamide and related compounds. Most of these agents are probably secondary causes of granulocytopenia. More often no cause can be found for the primary malignant neutropenia. The bone marrow shows aplasia or a hyperplasia with a "maturation arrest" of the myeloid series. The chance of recovery from the disease is best in patients showing a "maturation arrest" of the granulocytic tissue and a pronounced and sustained monocytosis peripherally.

The therapeutic agents that have been used in treating cases of malignant neutropenia include stimulating doses of roentgen ray, adenine sulphate, pentnucleotid, liver extract, iron, yellow bone marrow concentrates, leukocytic extract and small blood transfusions. Non-specific therapy such as the injection of sterile milk or turpentine is useless. Some investigators believe that the patients recover or die regardless of the therapy.

Secondary granulocytopenia differs from the primary type only in its mode of production. In most instances it carries the same prognosis as the primary form. Inflammatory changes in the oral cavity such as ulceration and necrosis with membrane formation, and a leukopenia and neutropenia can occur in acute poisoning, acute leukemia, aplastic anemia, sepsis, diphtheria and infectious mononucleosis.

Besides pale and bleeding gums, the lesions in leukemic processes involving the mouth include swelling, hypertrophy and destruction of the interdental tissue following necrosis. These changes in the oral cavity may resemble those seen in patients with scurvy, acute stomatitis

due to a variety of conditions and Vincent infection. Necrosis of the mucous membranes of the oral cavity is seen on the palate, cheeks, lips and gums. Spirochetal infections can cause similar appearing lesions. Sore throat and enlarged tonsils are sometimes seen in chronic leukemia. Necrotic lesions of the tonsils and pharynx occur in acute leukemia. Acute follicular tonsillitis, peritonsillar abscess, diphtheria, tuberculosis, syphilis and fusopirochetal disease will not be confused with leukemia and other conditions that cause leukopenia, neutropenia and ulceration of the oral cavity if the following factors and examinations are kept in mind: (1) careful inquiry concerning the use of drugs, (2) history of exposure to over dosage of roentgen rays or radio-active substances, (3) detailed blood and bone marrow studies, (4) laboratory aids such as blood cultures, bacteriological studies of the oral lesions, sputum examination, blood Wasserman reaction and several of the tests previously mentioned.

Treatment is similar to that given for primary neutropenia. This includes good nursing, hygienic care of the lesions, protection from new infections, the removal of drugs such as pyramidon, sulfanilamide etc., blood transfusions, liver extract, yellow bone marrow concentrates, leukocytic extract and pentnucleotid.

DISCUSSION

Disturbances in the normal physiological function of the body is reflected by cellular changes in the peripheral blood and in the blood forming organs. These blood changes may be slight and temporary in nature and are followed by a complete and spontaneous recovery; or the blood changes may be completely or partially reversible following specific or palliative treatment; or finally the disease affecting the hematopoietic organs may be irreversible and ultimately fatal. Therefore it is imperative that a diagnosis of the type of blood disorder be made before treatment is instituted. Accurate interpretation and diagnosis of disease processes is acquired through personal and continued experience with many varieties of conditions both clinical and hematological. It is only in this way that a better understanding of the physiologic pathology and treatment of various disorders of the blood forming organs can be approached.

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THE BASIS FOR THERAPY IN INTESTINAL OBSTRUCTION

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In recent years a decided change has occurred in the mode of treatment of intestinal obstruction. In the past it was customary to advise immediate operation because of the increasing seriousness of the condition and the high mortality rate which attended delay in surgical therapy. That immediate operation was often successful cannot be denied. That it was frequently inadvisable became apparent when it was noted that many individuals with acute intestinal obstruction were in such poor physical condition before operation was undertaken that recovery could be only a remote possibility. Thus a period of preliminary preparation of the patient for operation was deemed necessary. Some advocated a prolonged period of preparation for surgery with the hope and expectation that the cause of the obstruction would be overcome and no immediate operation would then be necessary. While this mode of treatment, too, was successful in many instances, the prolongation of this period of preparation frequently made ultimate recovery impossible. At the present time the advantages in operating on a patient who has been well prepared for operation are recognized. The decision as to the time of operation or the need for operation is made during the period in which preparation for a prospective operation takes place. This preparation is based on the factors responsible for the illness of the patient and is directed toward correcting the alterations in the normal body functions occasioned by the obstruction.

The illness of the patient with intestinal obstruction varies in intensity with: 1, the duration of symptoms; 2, the level of obstruction in the intestinal canal; and 3, the extent of vascular impairment in the involved bowel. These factors determine : a) the amount of fluid and mineral loss through vomiting or stagnation in the intestinal lumen; b) the extent of intestinal distention, and c) the severity of toxemia and infection that follows gangrene, actual or impending, of involved bowel. All of these factors play a role to a greater or lesser extent in the production of symptoms following obstruction due to any of the large variety of pathologic lesions responsible for interference with the passage of intestinal contents distally in the intestinal canal.

Duration of symptoms. Experience has demonstrated that prompt diagnosis early in the course of the patient's complaint and appropriate treatment avoid most of the factors responsible for the illness of the patient in acute intestinal obstruction. A thorough analysis of the history of the patient's complaint, a complete physical examination and the necessary laboratory work aid in establishing the correct diagnosis before irreversible changes take place. The longer the duration of the obstruction, the more extensive are those alterations in the blood and body tissues which are responsible for many of the symptoms that develop. Also, the longer the duration — the less effective become the propulsive and constrictive efforts of the intestinal musculature. The fatigue which ensues is a factor in the development of distention which supervenes. If the blood supply to the bowel is involved, the longer the duration the more cer-

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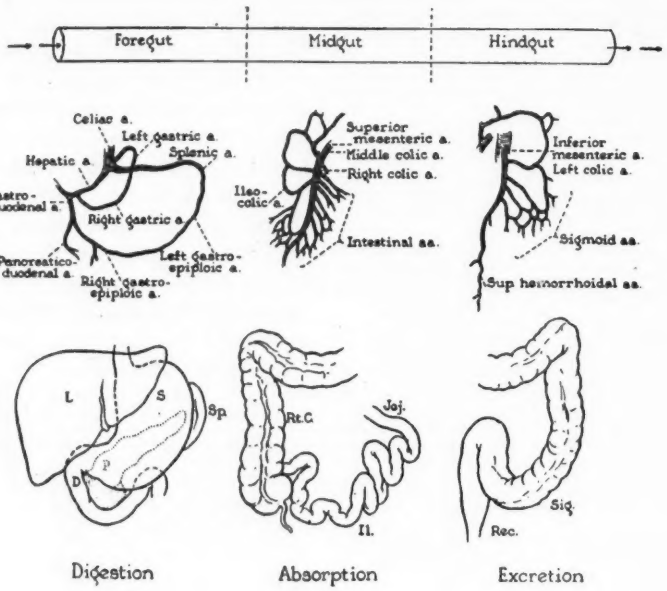

Fig. 1

tain is the danger of necrosis, peritonitis, toxemia, septicemia and shock. If vascular impairment arises early as in mesenteric thrombosis or volvulus, prompt relief is imperative. In the absence of strangulation the prompt institution of correctional therapy as outlined below will obviate many of the unfavorable consequences of prolonged interference with the flow of intestinal contents.

Level of Obstruction. To understand the cause of the variation in symptoms due to obstruction at different levels in the intestinal canal, it will be of some value to review the origin and integration of the intestinal tract. The gastro-intestinal canal embryologically is divided into three distinct portions: the foregut, the midgut and the hindgut. (Fig. 1) Anatomically the foregut is that portion of the digestive tract which receives its blood supply from the coeliac axis of the aorta. The organs supplied by this vessel are the stomach, duodenum, liver, pancreas and spleen. Physiologically, these organs are concerned with the processes of digestion. The stomach produces hydrochloric acid and enzymes and in addition, offers mechanical action to aid in reducing the food substances, so that absorption may be possible lower in the intestinal canal. The pancreas produces alkalies and enzymes for the purpose of digestion and the liver assists by producing bile salts. The relationship of the spleen to digestion becomes apparent when it is noted that the presence of food in the stomach on short notice occasions a prompt flow of digestive secretions into the lumen of the intestinal canal. Contraction of the spleen increases the blood volume and makes available fluid to the stomach, pancreas and liver for the purpose of facilitating an immediate secretion.

Anatomically, the midgut receives its blood supply from the superior mesenteric artery. The organs supplied by this vessel are the jejunum, the ileum and the right half of the colon. (Fig. 2) Physiologically, this portion of the intestinal canal is concerned with absorption. The process of absorption involves the selection of food substances by the mucous membrane from the intestinal canal. If there is a small amount of available fluid in the intestinal canal and the food substances are concentrated, absorption may be decreased or delayed. In order that the food substances may be sufficiently dilute so that absorption may be possible it is necessary for a large amount of liquid material to be poured into the intestinal lumen. This phase of absorption, dilution of food, is brought about

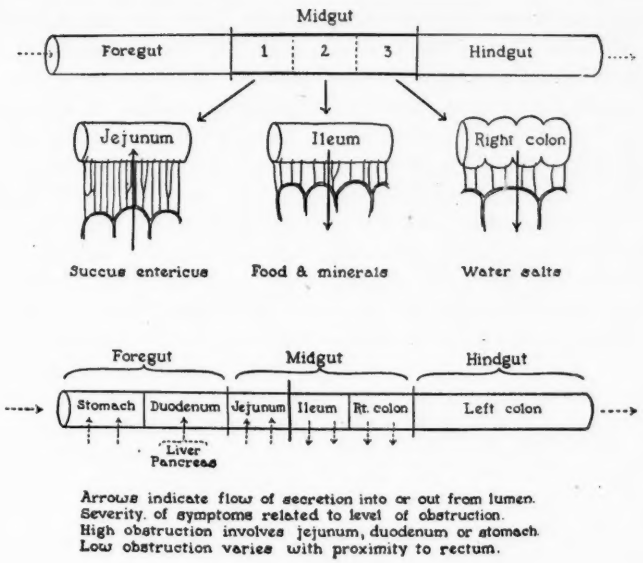

Fig. 2

by the succus entericus which is poured into the jejunum. The jejunum has a very abundant arterial supply which furnishes the fluid necessary for the production of succus entericus. Physiologically little absorption of water or salt occurs here. The second portion of the midgut is the ileum. In the ileum most of the food is actually absorbed. It is well known that chronic diseases involving the ileum are frequently associated with nutritional disturbances, such as anemias and hypovitaminosis. While the ileum may absorb large quantities of water and salts this would be disadvantageous since absorption of water here would concentrate the intestinal contents and diminish absorption of the nutritional elements remaining in the ileum. The contents of the ileum usually remain in a liquid state. The third portion of the midgut is the right half of the colon. This portion of the bowel absorbs water and salts. Thus there is no loss of the materials that were poured into the intestinal canal for the purpose of preparing food for absorption. While dextrose solutions are absorbed promptly in the ileum they are not absorbed in the colon to any appreciable extent. This indicates the variations in the specific property of absorption in the three divisions of the midgut.

Anatomically the hindgut is supplied by one blood vessel, — the inferior mesenteric artery. It includes the left half of the colon, sigmoid and rectum. The function of the hindgut is to store the non-absorbed residue of the intestinal contents and at intervals expel this material from the intestinal canal.

The foregut and the first portion of the midgut have materials constantly being poured into their lumens. Below the jejunum absorption removes fluid from the intestinal canal.

Intestinal obstruction above the level of the junction between the jejunum and ileum prevents the passage of secretions to the absorptive portion of the intestinal canal. These secretions are lost to the body and increase the seriousness of the patient's illness. Obstruction above this point is called "high" intestinal obstruction. Obstruction below the level of the junction between the jejunum and ileum leaves a progressively longer portion of the absorbing surface available for absorption. Obstruction in the absorptive portion of the intestinal canal may well be called "intermediate" intestinal obstruction. In a "low" obstruction (left half of colon) fluids poured into the intestinal canal may be absorbed in the ileum and in the right

half of the colon down to the site of obstruction. There may be no immediate loss of fluids from the body. A characteristic of the high obstruction is that the intestinal secretions cannot be absorbed. In the low intestinal obstruction, absorption may occur with but slight impairment for a long period of time. It is clear then that high obstructions are most serious since the patients become ill sooner from loss of fluids and salts and the symptoms are more pronounced. In those patients who have a "middle" or "low" obstruction many days may pass with few symptoms.

Vomiting. Obstruction in the duodenum near the pylorus results in vomiting with loss of gastric secretion. This is characterized by a loss of water, loss of chlorides and changes in the blood. Hydrochloric acid formation in the stomach is associated with a decrease in blood chlorides and replacement of carbonic acid in the blood by bicarbonate. The following formula indicates the probable mechanism of HCl formation:

In Cell	From the Blood		To Stomach	In-Cell
	↓		↑	
NaH_2PO_4	+ NaCl	→	HCl +	Na_2HPO_4
Na_2HPO_4	+ H_2CO_3	→	Na HCO_3	NaH_2PO_4
	↑		↓	
	From the Blood		To Blood	

The HCl in the cell is not free (lest corrosion of the tissues takes place) but is liberated from its combined protein through the action of chloresterase in the lumen of the stomach.

Normally chlorides are returned to the blood by absorption from the intestinal canal. Chlorides lost in the urine and sweat are replaced by salt in the ingested food. The excess bicarbonate appears in the pancreatic and intestinal secretion and in the urine (alkaline tide). When absorption is impossible as in high obstruction vomiting prevents absorption of chlorides secreted in the stomach and prohibits ingestion of chlorides present in food. This results in blood changes characterized by a decrease in blood chloride, an increase in blood bicarbonates and a shift in the blood pH towards greater alkalinity. If this condition continues, the blood changes may become profound and gives rise to an alkalosis. This condition is characterized by an increase in non-protein and urea nitrogen in the blood and the patient may complain of headache, thirst, restlessness, weakness and anorexia. There occurs a loss of weight, hypohydration, mental depression and ultimately, if unrelieved, coma and death. If the vomiting follows obstruction lower in the intestinal canal, in addition to the loss of gastric secretion there will be a loss of pancreatic secretion, bile and succus entericus. This is associated with a loss of water, carbonates, bicarbonates and sodium. Definite blood changes occur. There is a decrease in blood bicarbonate, a shift in the blood pH to decreased alkalinity (acidosis) and a decrease in blood sodium. The tissues lose their capacity to hold water due to the loss of sodium. The patient develops weakness, prostration, stupor and if prolonged, coma and death. In the past many of these symptoms were attributed to a toxemia due to absorption from the obstructed bowel. It appears the symptoms are due to the pathologic state associated with the blood changes that result from vomiting.

In view of this, the first indication for therapy in the presence of vomiting is the replacement of the materials lost both qualitatively and quantitatively. The patient who is vomiting is not only losing fluids from the body but also is not receiving fluids which are the daily body requirement. Under normal circumstances the average individual requires from 2000 to 3000 cc of fluids daily. In the presence of obstruction in addition to the fluid lost through vomiting a considerable amount of fluid may be immobilized in the non-absorbing portion of the intestinal canal. Also, there may be considerable stagnation of fluid in the absorbing portion in the intestinal canal which because of distention and vascular damage may be non-functioning. This may add an additional 500 to 1500 cc to the total amount of fluid necessary. Thus the total water requirement may vary between 2500 and 4500 cc.

The loss of salts varies with the amount of vomiting and fluid stagnation. Under normal circumstances the average individual requires from 5 to 15 gms. of sodium chloride daily depending on activities, occupation, natural habits of diet, etc. This is necessary to maintain a blood chloride level that varies between 340 and 380 mg per 100 cc of blood. Gastric juice (.4%

TABLE 1
NORMAL BLOOD CONCENTRATIONS

Na	340 mg./100 cc	PLASMA PROTEINS	5.62 to 7.45 gm./100 cc.
K	20 mg.	FIBRINOGEN	.29
	309 in RBC	ALBUMEN	4.11 (3.8 to 6) A - 2
			— —
Cl	340-380 mg.	GLOBULIN	2.61 (1.5 to 3) G 1
NaCl	566-633 mg.	LEVEL OF BLOOD PROTEINS BELOW 5% — EDEMA	
Ca	10 mg.	LEVEL OF ALBUMEN BELOW 2.5% — EDEMA	
Mg	2—4.5 mg.	LEVEL OF BLOOD PROTEINS ABOVE 7% — CONCENTRATION	
P	3.5 mg.	Hb 15 gm/100 cc RBC 5,000,000/c.mm	
DEXTROSE	80-100 mg.	S.g. BLOOD 1.057 S.g. serum 1.025	
CO —	3 1	MALE 42 to 50% CELLS	
—	— —pH7.45		
H CO —	60 20	FEM. 39 to 43% CELLS	

hydrochloride acid) has approximately 4 gms of chloride in 1000 cc. The amount of salt to be administered to the patient must include his daily normal requirement plus the amount lost through vomiting and the amount immobilized in the lumen of the intestinal canal. It is obvious that these amounts vary but a blood chloride determination may aid in establishing the degree of chloride loss. Table 1 indicates normal values in the blood. Profound changes in the blood resulting from hypohydration, etc., may be determined by the use of a few laboratory tests.

A guide to the amount of fluid necessary to restore the fluid balance is the quantity of urine secreted. The patient should be supplied with that quantity of fluid which will afford the production of 1000 to 1500 cc of urine with a specific gravity that varies between 1.012 and 1.018 It is of the utmost importance to determine the urinary output since the administration of large quantities of fluids may waterlog the patient. Edema of the brain, lungs or ascities may result and prove fatal. To administer 3000 cc one may supply this to the patient intravenously at the rate of one drop per second. Such administration will require 12 hours of continuous infusion. To supply as much as 6000 cc when this amount is deemed necessary (this is rare and dangerous) it may be given at the rate of one drop per second over a period of 24 hours of continuous infusion. There are some who prefer the intermittent plan of infusion. The patient is given 1000 cc at the rate of one drop per second every alternate four hour period. It will be noted that in all instances the rate of infusion is slow in order that the danger of cardiovascular, renal, hepatic or body tissue disturbances from a more rapid flow may be avoided.

The quality of the solution administered depends on the patient's requirements. There is no doubt that the patient is in need of sodium chloride but the quantity of this mineral must be administered in proportion to the patient's needs. It will be noted in table 2 that 4000 cc

TABLE 2

1000 cc. ISOTONIC SALINE HAS 8.5 gms. NaCl (3.3 gm. Na 5.2 gm. Cl)
2000 cc. ISOTONIC SALINE HAS 17 gms. NaCl
3000 cc. ISOTONIC SALINE HAS 25.5 gms. NaCl
4000 cc. ISOTONIC SALINE HAS 34 gms. NaCl
5000 cc. ISOTONIC SALINE HAS 42.5 gms. NaCl
6000 cc. ISOTONIC SALINE HAS 51 gms. NaCl

ISOTONIC SOLUTIONS	RATIO SOLUTIONS: BLOOD		
.85% NaCl	5% DEXTROSE	5000 mg/100 cc.)	50:1
5.0% DEXTROSE	BLOOD DEX.	100 mg/100 cc.)	
.425% NaCl 2.5% DEXTROSE	.85% NaCl	850 mg/100 cc.)	4:3
RINGER'S SOLUTION	BLOOD NaCl	600 mg/100 cc.)	

SODIUM LACTATE RINGER'S (HARTMAN'S) SOLUTION

3000 cc. MIXTURE	
(.425% NaCl)	12.75 gm. NaCl
(2.5% DEXTROSE	75 g. DEXTROSE

1000 cc. 5% DEXTROSE SOLUTION (ISOTONIC) 50 gm. DEXTROSE
1000 cc. 10% DEXTROSE SOLUTION (HYPERTONIC) 100 g. DEXTROSE
1000 cc. 5% DEXTROSE IN NORMAL SALINE — (HYPERTONIC) 8.5 gm. NaCl 50 gm. DEX.

of isotonic salt solution contains 34 gms. of salt. This amount may be much more than is necessary for the patient and may be harmful in that the kidneys may not be able to eliminate the excess promptly enough. This will result in the storage of salt in the body tissues with resulting edema. If the patient already has renal damage the ability to eliminate salt may be so impaired that edema will appear more promptly. One should, therefore, gauge the amount of salt necessary by the average daily requirement and the volume of the vomitus plus the amount of secretion that may be removed from the intestinal canal by suction. Table 2 lists isotonic solutions which may be of value in intravenous therapy. Hartman's solution (sodium lactate Ringer's solution) aids materially in a more prompt restoration to normal of the hydrogen ion concentration in the blood. The mixture (2.5% dextrose with .425% sodium chloride) is also a desirable solution because its continuous administration will avoid the possibility of supplying too much or too little salt. It is an isotonic solution 4000 cc of which contains 17 gms. of sodium chloride. This amount frequently is an adequate amount in a 24 hour period for the average individual with intestinal obstruction. In the absence of vomiting 5 to 9 grams of salt will suffice. The continuous use of .9% sodium chloride in 5% dextrose usually supplies too much salt. The use of 1000 cc of isotonic sodium chloride in distilled water or 250 cc of 2% sodium chloride as an initial dose helps to restore more promptly the immediate chloride and sodium shortage.

Distention. Distention of the abdomen in intestinal obstruction is due to the accumulation of gas and the immobilization of fluids in the intestinal canal. The gas that accumulates represents for the most part swallowed air. It has been found that over 67% of the volume of the gases in intestinal obstruction are from this source. The remaining amount is derived from fermentation or putrefaction of intestinal contents and from the diffusion of gas into the bowel lumen from the blood stream. The immobilization of fluids in the intestinal canal is due to the decreased peristalsis in complete obstruction, venous stagnation, decreased absorption and a continuous secretion due to secretagogue stimulation. The results of distention are: 1, portal stagnation; 2, changes in the mucous membrane; 3, toxemia; 4, peritonitis; and 5, thoracic disturbances.

1. The portal circulation is assisted by active intestinal motility. In complete obstruction with distention a marked reduction in motility occurs. This decreases the volume of portal circulation. In the experimental animal it has been found that ligation of the portal vein results in death in a period of 6 to 18 hours. In the human a comparable condition does not exist but the decreased portal circulation in itself may result in changes which are similar to those in the experimental animal but lesser in degree. 2. Changes in the mucous membrane. It has been shown that toxins which normally are not absorbed in the normal intestinal canal may be absorbed by the distended obstructed loop. Dragstedt has shown that B. botilinum toxin is absorbed by the mucous membrane in an obstructed loop of bowel but it is not absorbed by the mucous membrane in the unobstructed bowel. 3. Toxemia. In the presence of distention diffusion of toxins through the intestinal wall occur. It is thought that these toxins may be absorbed by the lymphatics and carried to the blood stream. The nature of the toxemia and the origin of the toxins independent of the alterations in the blood is as yet not fully understood. 4. Peritonitis as the result of perforation or seepage of bacteria through the wall of a distended loop of bowel may occur. Actual perforation is rare but peritonitis in long standing cases occurs more frequently. 5. Thoracic disturbances take place in the presence of marked distention of the abdomen. Descent of the diaphragm is difficult. This impairs respiration both thoracic and abdominal. A varying degree of anoxemia may result. In some individuals the respiratory difficulty may occasion cardiac distress due to derangements in the relation between circulation and respiration.

In view of the results of distention it is obvious that the indication for the treatment of this phase of intestinal obstruction is decompression of the distended bowel. This may be accomplished by intubation and suction. Intubation may be gastric, duodenal, jejunal, ileal and in some instances cecal. The important

contributions of Wangensteen and Johnson and the development of the Miller-Abbott tube and its modifications have made treatment of this phase of intestinal obstruction possible without resorting to immediate surgery. In some instances decompression by the internal method may be difficult or impossible and the establishment of an ileostomy or cecostomy may be in order. In some cases (incarcerated hernia) prompt surgery may overcome the distention. The inhalation of oxygen has been suggested for its value in the removal of nitrogen by diffusion into the blood stream.

Strangulation. The extent of vascular impairment plays a considerable role in the severity of the illness of the patient. When strangulation of bowel occurs in the free peritoneal cavity the symptoms are more severe than when a similar acute strangulation occurs in a hernial sac. This clinical observation has been demonstrated also in the experimental animal. There occurs as a result of strangulation a loss of blood proteins into the lumen of the bowel and into the peritoneal cavity. The bowel itself becomes congested and holds immobilized a volume of blood that is in proportion to the length of the involved segment of bowel. In most instances the venous return is occluded before arterial obstruction takes place. The amount of blood pumped into tissues whose veins are occluded may be considerable. This loss of blood from the circulatory system may result in shock and prove fatal. The loss of blood protein may result in a general physical disturbance as noted in table 1. Peritonitis frequently accompanies strangulation and toxemia is often the cause of the profound symptoms that may be present. In view of these effects of strangulation it is clear that the indication for therapy for this phase of intestinal obstruction alone are the restoration of blood proteins and blood volume by the use of blood transfusions and serum transfusions; and, the removal of the dead bowel from the peritoneal cavity as promptly as the condition of the patient will permit. The value of hemo-therapy, sero-therapy and chemo-therapy for their antitoxic or anti-bacterial effects must be kept in mind.

SUMMARY

The duration of symptoms and the level of obstruction determine the intensity of three phases of intestinal obstruction from the point of view of pre-operative therapy: 1. Vomiting. The effects of this may be overcome by the use of the appropriate quality of intravenous solutions in adequate amounts. 2. Distention. This may be overcome by decompression through intubation and suction or if necessary, ileostomy, cecostomy, or release of incarceration. 3. Strangulation. The effects of strangulation may be overcome by the use of blood or plasma transfusions and the removal of the dead bowel from the peritoneal cavity as promptly as circumstances permit.

While the patient is being prepared for a prospective operation certain diagnostic and additional therapeutic procedures may be carried out. A complete examination is essential to observe hernias, scars, rectal tumors, etc.

The patient's stomach is aspirated of its contents and washed out. A suction tube is inserted and continuous suction is instituted. In the absence of acute abdominal inflammation a two quart enema is given to empty the colon. A scout film of the abdomen is taken to determine the bowel pattern. At intervals suction is discontinued and two to four ounces of mineral oil are placed into the stomach. This oil is looked for in the subsequent washings from the large bowel. If a small amount of the enema can be retained a barium enema can be given and the site of obstruction noted on fluoroscopic examination or in the x-ray film. If repeated enemas fail to relieve the obstruction in the large bowel, a cecostomy is necessary to overcome the closed loop obstruction. If oil given by mounth fails to appear in the washings from the colon and the intestinal sounds disappear a complete obstruction of the small intestine is present and exploration of the abdomen is necessary. The presence of oil or gas in the washings from the colon indicates that the obstruction is not complete, or that the obstruction is relieved and urgency for surgical treatment is not essential. Obstructions low in the ileum are not associated with tenderness in the abdomen. In the absence of infection, tenderness indicates vascular impairment to the bowel and early operation is therefore essential.

CONCLUSIONS

The administration of parenteral fluids in adequate quantity and appropriate quality; intestinal decompression; enemas and the use of mineral oil by mouth are of diagnostic and therapeutic value. These measures constitute the important pre-operative therapeutic procedures when surgery is indicated.

CARCINOMA OF THE RECTUM*

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Carcinoma of the rectum demands the most earnest attention of the medical profession and the laity, as over 7,000 persons die of this ailment annually in the United States. Unfortunately the diagnosis is seldom made at the early stage, when treatment offers its greatest promise. It is not generally realized that nearly a half of all persons with carcinoma of the rectum upon whom a radical operation has been properly performed are alive and well five years later. Moreover, it is but rarely known that a patient with a well functioning colostomy is healthy and comfortable and able to resume his business and social activities.

Diagnosis. — The diagnosis of rectal carcinoma is comparatively easy of accomplishment, and yet this phase of the problem continues to be a sadly neglected one. In many instances the failure on the part of the physician to discover a rectal growth can be laid directly to his failure to examine the rectum. This is an unpardonable error of omission. Reticence on the part of most patients to report any rectal disorder is of course well known, and with the tendency on the part of many physicians to be careless in their attitude regarding physical examination of the anorectum, a difficult situation has been created. The remedy lies in further education of both the public and the general physician. Blood in or on the stool, any complaint involving the anal canal or rectum or any change in bowel habit makes a thorough examination of this region necessary. It is a safe rule to carry out this examination in all cases in which the cause of an abdominal complaint is not immediately apparent.

Of the carcinomas which involve the large bowel, by far the majority occur in the left colon. The greater number of these left-sided lesions are found in the rectum and the rectosigmoid. Of these distally situated growths, many are within the reach of the examining finger provided that finger belongs to an inquisitive physician who is not afraid to use it. Accordingly, therefore, a good share of colonic malignancies are accessible to direct visualization by means of proctosigmoidoscopic examination. Certainly all rectal growths can be seen directly on endoscopic examination, and nearly all of them can be detected by the examining finger.

With regard to physical examination of the anorectum, the two principal procedures are palpation by means of the examining finger and inspection or visualization of the anorectum by means of the proctosigmoidoscope. It must be emphasized again and again that failure on the part of the physician to detect anything abnormal on digital examination by no means relieves him of the obligation of making a proctosigmoidoscopic examination or at least of seeing that one is made if he does not choose to do it himself.

It has been the custom of many physicians, when attempting a digital examination of a patient's rectum, to ask him to "strain down." In most instances we feel that this interferes with a satisfactory examination. We prefer to have the patient avoid straining if possible. There is one exception to this practice, and that is with regard to lesions of the upper third of the rectum and those of the rectosigmoid. In such instances the physician's finger may not reach the tumor unless the patient assumes a squatting position and "strains down." If the involved segment of the bowel is not fixed, it

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may descend sufficiently to carry the tumor within reach of the examining finger.

For digital and proctosigmoidoscopic examination, the patient is placed in the inverted position. In this connection use can be made of a practical feature taught by Buie and N. D. Smith. The examiner should stand at the patient's left and use his left index finger, regardless of whether he is right or left handed. During this maneuver the other fingers of his left hand do not interfere with the examination, because they are to the left, to the right or posterior, and the tip of the index finger can usually reach the promontory of the sacrum, especially if the examiner turns toward the foot of the table and leans forward. Thus he should be able, in most instances, to explore the entire rectum digitally. Were he to use his right hand, the other fingers would be against the patient's perineum, thus limiting the digital exploration to the lower and middle thirds of the rectum. Some right-handed examiners solve this problem by standing to the patient's right during the digital examination and to his left during the endoscopic examination.

In both office and hospital practice it is frequently necessary to place a patient in a left Sims position. In this instance the use of the right index finger is much easier. The left-handed examiner can place his patient in a right Sims position, but this is not at all practicable for the endoscopic examination, which is difficult at best in the left Sims position.

It is our contention that even an inexperienced examiner can soon learn the normal landmarks within the anal canal and rectum if he endeavors to keep in mind the gross features of anorectal anatomy and the relations of the neighboring structures.

On digital examination one attempts to note the approximate size, shape and location of the tumor. It may involve any or all walls of the lower, the middle or upper third of the rectum. It may be annular or crateriform, thus invading the wall of the rectum, or it may be a soft "polypoid" tumor extending into the rectal lumen. The latter type affords a much better prognosis than the former. One also attempts to determine whether the growth is movable or fixed and whether or not there is infiltration of the neighboring tissues. The presence of blood on the examining finger is suggestive but is not of great importance as a diagnostic sign.

Inspection or visualization of the rectum is accomplished by means of the proctoscope. The inverted position allows atmospheric pressure to aid "opening up" the bowel. Frequently the examiner can demonstrate a rectal lesion to his students more satisfactorily by the use of a short anoscope and a light carrier (the patient being in an inverted position). In this way, one may obtain a better perspective. Direct visualization allows the examiner to confirm or to correct the impressions he has obtained on digital examination. He notes the extent of normal bowel between the lesion and the anus and determines the approximate portion of the rectum involved. The degree of obstruction can usually be determined during proctoscopic examination. In some instances the instrument can be passed beyond the growth into normal bowel proximal to it. There may be sufficient narrowing of the lumen to prevent passage of the ordinary endoscope (five-eighths of an inch in diameter) beyond the growth but not sufficient to prevent the passage of a smaller caliber instrument. In this way the upper limit of the lesion can be determined, and occasionally an additional lesion may be determined. It frequently happens, however, that the obstruction is so pronounced that it is dangerous to attempt to pass even a small caliber instrument through what little lumen remains. Information thus obtained should be of great help to the surgeon in the planning of his surgical attack.

A practical feature is worth mentioning at this point. It is not unusual to find that a patient who has had no warning of trouble prior to the onset of a subacute or acute obstruction is harboring a high rectal or rectosigmoid carcinoma. In such an instance the proctologist may succeed in passing a small proctoscope through the obstructed lumen. He can then pass a small rectal tube through the proctoscope and remove the latter, leaving the catheter in place. This may allow sufficient decompression to enable the surgeon to postpone radical surgical treatment for a few days so that the patient can be properly prepared.

At the time of a proctoscopic examination one has the opportunity to remove one or two small pieces of tissue from the tumor with a "biopsy forceps" for microscopic study by the pathologist. It is well to do this at the end of the examination in order that free blood may not obscure the field. Excess bleeding can be controlled by means of electrocoagulation. Some examiners prefer the electric loop, which obviates bleeding without "cooking" the specimen appreciably. On our surgical service, most patients who are to have a colonic operation are given at least two days of preparation. By the time the patient is ready for operation, the surgeon has received the pathologist's report on the biopsy specimen.

With regard to the differential diagnosis, one should consider amebic granuloma of the rectum.[1] Grossly, it may be impossible to differentiate the granulomatous mass from a malignant tumor, but biopsy and stool tests, carefully done and properly interpreted, should serve to prevent serious error in management.

When a growth is found to involve the rectovaginal septum in a female patient who is in the reproductive period of life it is well to consider the possibility of an endometrial tumor. Here again biopsy is invaluable.

Accordingly, therefore, a thorough study of rectal and colonic disease should include stool tests (cultures, ova, cysts, parasites, etc.), proctoscopic examination, including procurement of material for cultures and for direct smears and of tissue for microscopic study, and roentgenologic examination.

Photographic Study. — Records can now be made of lesions of the rectum and rectosigmoid by means of cameras designed to take pictures through the sigmoidoscope. A 35 mm. kodochrome, giving an image that is three-fourths the actual size, may be obtained for quick reference, or 16 mm. motion pictures in kodochrome may be taken to give the relationship of the tumor to the surrounding normal tissues and the anal outlet. Larger (35 mm.) views are taken by means of a powerful flash bulb with a head mirror type of arrangement (Helmholtz) which reflects light down the sigmoidoscope, the camera lens being placed behind the viewing hole in the mirror. In the movies the coaxial lighting is obtained by reflecting the condensed image of a ribbon filament lamp down one half of the tube and placing the camera lens in front of the other half. A small reflecting mirror is placed in front of the upper fourth of the camera lens. This reflects the image at the end of the sigmoidoscope into a magnifying periscope, thus enabling the operator to see the field even during the exposure of the movie film.

Pathology. — The results of the studies of recent years dealing with the pathology of carcinoma of the rectum have been of great value in clarifying the rationale of the surgical treatment. The work of David[2] reveals strong evidence that polyps are preceded by hyperplasia of the mucosa and are the precursors of carcinoma. He points out that polyps may remain benign for years but that they cannot be trusted to do so.

The majority of carcinomas of the rectum are adenocarcinomas, but fibrocarcinomas and colloid, squamous and papillomatous carcinomas have been described. The grading of the tumor has no relationship to the treatment but is a help in the determination of the prognosis. Broders, Buie and Laird[3] studied 432 specimens and concluded that a combination of the Broders grading and the Duke grading gives a more accurate prognosis than either does separately. They say that "tumors of higher grades are more rapid in growth and their metastases cause death of the patient earlier than those of the lower grades." Rankin[4] has found the incidence of glandular involvement to be in direct ratio to the grade of malignancy.

The outstanding contribution of Gilchrist and David,[5] who studied more than 8,000 different lymph nodes from 154 operative specimens of carcinoma of the rectum and colon, has demonstrated the futility of a local operation. In their series they found that the size of the rectal tumor was of little value in determining the presence or absence of lymph node metastases; that a lymph node might have carcinoma without gross change; that specimens of the rectum averaged 60 nodes per specimen, and that 63.5 per cent of the specimens of carcinoma of the rectum contained lymph node metastases.

Treatment. — In all cases, then, of carcinoma of the rectum that is operable, only the most

radical removal of the tumor and of the area which bears lymph nodes offers the patient a chance of a cure. Contrary to popular belief, the chance of cure is a very real one. In a large series of cases that has been reported,[6] 42 per cent of the patients with carcinoma of the rectum who had radical operations were alive and well without recurrences more than five years later. Carcinoma of the anal canal is usually highly malignant, and when these tumors have metastasized to the inguinal lymph nodes, radical operation is not indicated.

In recent years the criteria of operability in carcinoma of the rectum have been becoming steadily broader. In 1939 Lahey[6] stated that he considered that in 88 per cent of his cases the condition was operable; in this group there was a mortality of only 10 per cent.

A large-sized growth may often be removed as readily as a smaller one, and, moreover, it may have fewer or even no metastases. Growths on the anterior wall of the rectum are more difficult to remove than those on the posterior wall. In the male the fixation to the prostate and seminal vesicles may be so firm as to preclude excision. In the female, however, fixation to the uterus is not a contraindication to removal, as the rectum and uterus may be removed en masse. If the growth is adherent to the posterior wall of the vagina, this may be resected without difficulty. Often the fixation is due to inflammatory reaction and represents a relatively slight obstacle to successful excision. However, if the inflammatory reaction is very marked, it may be desirable to perform a colostomy and treat the distal segment by irrigations, a procedure which will markedly reduce the size of the tumor. Obesity is a distinct but not an insuperable obstacle to operation. Loss of weight and anemia are not contraindications, but an attempt should always be made to rehabilitate the very depleted patient before operation. Advanced age in itself does not preclude operation, but it may have a bearing on the decision as to whether the operation should be done in one or in two stages. The general condition of the patient must be correlated with his age. A robust patient of 65 years may be an entirely suitable subject for a one stage operation, while a younger person may require a two stage procedure. The presence of small metastases in the liver is not a contraindication to radical operation. It is thought by some that growth of the metastases is often retarded by the removal of the primary growth. Moreover, death from metastases is longer deferred and is accompanied by much less suffering than that from the primary tumor plus metastases. If the carcinoma of the rectum is allowed to remain, the patient is usually forced to a colostomy because of acute obstruction which eventually leads to pain, tenesmus and bloody discharges due to the rectal tumor. Recently an instance of successful excision of a liver metastasis has been reported.[7]

It is of greatest importance that an effort should be made to correct the erroneous unfavorable conception on the part of the public, and regrettably on the part of most physicians also, regarding a colostomy. A man or woman with a colostomy may return successfully to all former business and social activities. Seventy-five per cent or more do not require a bag or any other appliance. But to attain this successful result there must be careful attention on the part of the patient and the physician for six months. Once the colostomy is properly made, its control is entirely a matter of diet regulation and in some cases periodic irrigations. For the first few weeks an extremely constipating diet is employed. This is followed by a less constipating diet, and the final diet is almost entirely normal. An occasional patient will require paregoric or bismuth subcarbonate. Each morning, or in some cases every other morning, the patient gives himself an enema through the colostomy. This he can readily do while sitting up and employing an irrigating outfit and proper basin. In between times a piece of gauze is simply placed over the colostomy.[8] In a very few cases during the first few months, the vitallium plug devised by Smith[9] should be used to prevent soiling between evacuations. Some patients are even able to have a spontaneous movement without an irrigation.

The preparation for a radical operation on the rectum is extremely important. Two days before operation the patient is placed on a residue-free, high caloric diet, and two compatible blood donors are obtained. Six drams of Fleet's phospho-soda and an enema are given morning and evening. On the day before the operation, 6 drams of the phospho-soda and an enema are

given morning and evening, and the rectum is aspirated with a catheter at 2, 6 and 10 p.m. One dram of paregoric is given at 2 and 6 p.m. and 2 drams at 10 p.m. On the morning of the operation the rectum is aspirated and the tube is left in.

The risk of a one stage operation is no greater than the combined risks of the two operations in the two stage procedure, if cases are excluded in which there is evidence of advanced fixation due to marked inflammatory reaction about the tumor. Moreover, it is felt among those thoroughly familiar with the one stage method that the technical difficulties are less than with posterior resection, with the rectosigmoid not mobilized from above. To William Ernest Miles,[10] of London, is due the credit for popularizing the single stage abdominoperineal procedure. His operation, which was first described in *The Lancet*, in December 1908, marked the first serious departure from the practice of perineal excision of the rectum which was in vogue at that time. For the next thirty years, opinion was fairly well divided as to which was the more rational procedure. That the trend is now definitely in the direction of the radical excision as described by Miles is, however, unquestioned.

It is also interesting to note that after thirty-two years there have been only slight modifications of the original technic, which was designed primarily to include the three principal pathways of the lymphatics from the rectum. With this as an objective, Miles advocated incision of the peritoneal covering of the mesocolon on either side of the bowel from the level of the bifurcation of the aorta to the base of the bladder in the male and to the base of the uterus in the female; these lateral incisions were then joined across the base of the bladder in the male and the base of the uterus in the female. A knuckle colostomy was placed in a stab wound in the left inguinal region, and the sigmoid colon was divided approximately 2 inches below the colostomy, each end being closed with a purse-string suture. The superior hemorrhoidal artery was then ligated just below the highest sigmoidal branch and the distal segment of the colon together with its mesentery freed by blunt dissection down to the pelvic floor; the same technic served to loosen the rectum and its fascia propria from the hollow of the sacrum. After division of the lateral ligaments of the rectum, the latter organ was dissected free anteriorly from the bladder (the posterior vaginal wall in the female) as far down as the prostate gland (the posterior vaginal wall in the female). The abdominal portion of the operation was concluded by suturing the peritoneum over the isolated distal portion of the sigmoid and the upper portion of the rectum which had been crowded down in to the pelvis, and closing the abdominal wall. The patient then was turned over and the perineal phase of the operation carried out. This consisted of an elliptical skin incision extending from the sacrococcygeal junction to and encircling the anus, mobilization of the rectum, after as wide removal of the levator ani muscles as possible, and separation of the anterior wall of the rectum from the prostate gland and seminal vesicles (posterior or vaginal wall in the female).

Many new operative technics for radical excision of the rectum in one stage have been described in the past fifteen years, but the fundamental principles of the Miles operation constitute the framework upon which most of these procedures have developed. Moreover, many of the leading authorities in this field of surgery, after trying various modifications, have returned to the Miles plan as it was originally outlined. However, certain variations in the operation save a few minutes here and there, lessen the danger of contamination and reduce the chance of wound disruption. Although it has been our practice in recent years to employ the Miles operation for nearly all carcinomas of the rectum, we have adopted several modifications which we feel have made the operation a little safer and therefore may justifiably be classed as refinements. These modifications, or refinements, in the order in which they appear during the course of the operation include, first, in females, temporary anchorage of the fundus of the uterus to the anterior abdominal wall, thus providing better exposure of the cul-de-sac and rectosigmoid and obviating the necessity of manual retraction of this organ. In 1936 this modification was suggested to us by Rankin and has proved of definite advantage.

In 1919 T. de Martel,[11] of France, introduced an intestinal clamp which has proved an advance so far as asepsis is concerned and which saves

time in dividing the bowel. The instrument comprises a unit of three separate, straight, matched compression clips, the free ends of which can be locked closer with a special clip. The bowel is crushed with the three clips, after which the middle one is removed and cautery section of the bowel is performed between the two remaining clips. In recent years Wolfson[12] and Tyler[13] have designed instruments which represent modifications of the de Martel clamp but which are based on the same principle.

Pfeiffer was among the first to advocate division of the sigmoid near the rectosigmoid junction, leaving only a short segment of bowel over which the revised peritoneal floor had to be sutured. The mesentery to the proximal loop of sigmoid was excised below that portion which contained the highest sigmoid artery, and the long sigmoid loop was then drawn through a stab wound in the lower left inguinal quadrant, the excess being cut away with the cautery. Thus the principle of radical excision of the sigmoid and attached mesentery with its elaborate system of lymphatics was retained and the advantage of the shorter distal segment realized. Coller has further modified this step by leaving the devitalized excess portion of the colostomy as a conduit which eventually sloughs away, or is excised, but which can be at once opened, since its terminal opening can be placed in a bottle some distance from the wound.

Tom Jones has devised small caps made of stockinet material which are used for covering the clamped ends of the divided bowel. Into the open side of the cap is sewed a strong rubber band, which insures a tight fit over the bowel end. This so-called "over-seas cap" serves the purpose of additional protection against contamination by the resected bowel ends. Jones[14] employs figure-of-eight steel alloy wire sutures for closing the peritoneum and fascia around the colostomy and maintains that the incidence of wound infection is thereby greatly reduced.

We are convinced that the use of sulfathiazole in the posterior wound reduces the incidence of infection. During the past two months we have used the drug in six successive cases with but one instance of wound infection. As a comparison, we checked the results in the six preceding cases, in which the drug had not been employed, and found that there were five instances of definite infection of the posterior wound. In the light of this experience we feel justified in advocating the use of sulfathiazole as a routine procedure.

SUMMARY

Digital and proctosigmoidoscopic examination should be carried out not only in cases in which there are definite anorectal complaints but in all cases in which the complaint is such that it might be remotely associated with a lesion of the colon or rectum. Rectal polyps are precancerous lesions and should be destroyed. If a cancer of the rectum is operable, only a radical operation, with removal of the gland-bearing area, has any prospect of offering a cure. The preoperative preparation and the postoperative care are important parts of the treatment. The one stage abdominoperineal resection is almost always the operation of choice, and in these cases the postoperative five year rate of survival should be 40 per cent.

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The Japanese death rate is 17.4 per 1000 as compared to 10 or 11 in the United States. Japan's present death rate, in fact, resembles ours of *1900. Individual* causes of death in Japan are about as prevalent now as *in this country about 1900. For example,* the United States tuberculosis death rate now is 45 per *100,000. In Japan in 1937* the rate was 204, closely resembling our tuberculosis death rate in 1900 of 196. The picture is similar for diarrhea and enteritis. America has more than twice as many men to draw on in the military age group as Japan — 25 million men from 20 to 34, as against Japan's 11 million in this age group. Science News-Letter, Jan. 17, 1942.

PERINEAL PROSTATECTOMY

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Removal of the hypertrophied prostate by the perineal route is one of the 3 recognized methods for the relief of prostatic obstruction.

In the presentation of this portion of the symposium I will not attempt to emphasize the superiority of perineal, suprapubic or trans-urethral prostatectomy, but rather to show where and when perineal prostatectomy is best indicated.

Each of the 3 operations has its definite place and indications and because of this we do any one of them when either procedure seems best suited for the local conditions present and the general condition of the patient.

There are many urologists who do suprapubic prostatectomy routinely in all cases, usually as a 2 stage procedure. In some large clinics, particularly in the central west, the knife has been discarded in the treatment of prostatic obstruction and has been replaced by the routine employment of transurethral resection and prostatectomy, and there are also clinicians who do perineal prostatectomy exclusively.

The urologist should be well acquainted with all three procedures and in this way be able to determine for himself what best to do in a given case, rather than to do only one operation routinely.

There is nothing quite as satisfactory in prostatic surgery as a thorough acquaintance with the structures both above and below the pubis as well as the transurethral route.

The urologist should be well acquainted with the surgical anatomy of the male perineaum. There are, however, only a few men in any large community who are able to do perineal prostatectomy. Some difficulties may be encountered in mastering the perineal route, but they are not as great, nor is such an extensive experience necessary as with transurethral prostatectomy.

With the patient in the proper lithotomy position and with care and patience, the one danger, that of entering the rectum, can be avoided. Extreme care should be taken at the beginning of the operation to protect the rectum from injury, for once the rectum has been separated off and the prostatic capsule exposed, it has always seemed to me that the worst of the operation, for the surgeon, is over. Because of their lack of acquaintance with the anatomy of the male perineum most urologists do not even attempt this operation. One of the so called draw-backs of this procedure is the danger of incontinence. If the operation is done properly there is no damage to the external sphincter and the danger of incontinence, therefore, should be practically nil. Suture of the urethra to the bladder neck over a retention catheter at the end of the operation — the so-called closed method has, it seems to me, some advantages over packing or the use of a bag.

The advantages of the perineal route are many. This is the direct anatomical approach, and permits gravity drainage which is the most satisfactory. Supra-pubic drainage is uphill drainage. Considerable infection may remain in the bladder and prostatic bed for a long time after suprapubic prostatectomy, whereas, this is never as marked and clears up very quickly after perineal prostatectomy. The urine may remain cloudy for many months following supra-pubic or trans-urethral prostatectomy.

The mortality from perineal prostatectomy is the lowest of the 3 operations, the morbidity is also much less for the patient gets to feel better much sooner than with either of the other two procedures. The immediate post-operative course is much smoother.

There are certain definite indications for this operation. If the patient does not require a preliminary cystotomy the perineal route is the safest and best method of approach. Perineal prostatectomy is a one stage operation. A large number of patients fit into this category. When prostatic calculi are present, they are best removed perineally. The man with a large abdomen in whom the supra-pubic approach would be difficult, had best be operated upon perineally.

If there is any suspicion that carcinoma is present, perineal prostatectomy is the operation of choice. The treatment of clinically recognizable fully developed carcinoma of the prostate is hopeless and it therefore should be treated

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only palliatively. Urinary retention as a late complication with encroachment of the lumen of the urethra should be relieved by trans-urethral resection which can be repeated when necessary. The subject of carcinoma of the prostate requires more discussion than this paper will permit. In old people with carcinoma of the prostate one usually finds that the extension of the process is slow and that the patient can be made comfortable for a number of years with palliative measures and that radical surgery has a very questionable value.

However, the relatively young man of 50 or over in whom only a questionable nodule is found on rectal examination should have the benefit of radical surgery if at all possible. Radical total or subtotal prostatectomy can be done only perineally. When in doubt, a frozen section can be made with the perineum exposed and the posterior lobe and capsule presenting itself. If carcinoma is found early enough radical perineal prostatectomy with removal of all the structure from the ureteral orifices to the membranous urethra including the bladder neck, seminal vesicles, and ampullae can be done. This offers a good prognosis. There is no particular danger of incontinence with this radical procedure for the external sphincter remains intact and is sutured satisfactorily to the bladder. I have done over 40 of these operations.

Infiltrating tumors of the bladder at the bladder neck or immediately at its margin extending backward into the trigone or forward into the prostatic urethra can be removed only in this manner. It is usually not possible to properly diathermize infiltrating tumor in this location, and the end results are also unsatisfactory. Radical perineal prostatectomy with resection of the bladder neck offers a possibility for cure in these cases.

The patient with a small intra-urethral or fibrous prostate which would otherwise be amenable to trans-urethral resection may have a small calibered urethra which will not permit free passage of the resectoscope and will be torn when the large calibered resectoscope is passed through. A not infrequent sequel of trans-urethral resection is stricture of the urethra due to tears by the necessarily large resectoscope inserted into a urethra that may only comfortably admit a 23 or 25 sound. The ensuing strictures may be worse than the original disease. The patient with a small intra-urethral or fibrous prostate is in a large number of cases much more satisfactorily and safely relieved by perineal prostatectomy.

The patient who has had a perineal prostatectomy has very little or no febrile reaction and can be gotten out of bed within a few days. The nursing problem is not complicated and the patient may go home within a week — the post operative care can be given at home and thus there can be a considerable reduction in the all important item of expense of hospitalization.

When the capsule is incised preliminary to eneucleating the prostate perineally considerable pus may be found under the capsule. This may also at times be associated with some destruction of prostatic tissue and with small silent localized abscesses. Some pus is practically always present when the capsule or prostate is incised. Supra-pubic cystotomy as a first stage in a two stage prostatectomy is followed by marked reduction in the size of the prostate due to lessening of edema and infection but very frequently it does not entirely eliminate infection under the capsule or localized abscesses in the prostate. With supra-pubic prostatectomy under these conditions, the prostatic bed is severely infected, chills and fever may follow the eneucleation and recurrences of the chills and fever may follow removal of the packing. In some instances this may continue to a fatal termination. The danger of severe reactions or spread of infection following perineal prostatectomy is very slight for relatively little trauma occurs during the eneucleation and there is adequate perineal gravity drainage.

It is evident, therefore, from what has been briefly mentioned that urologists should not merely give lip-service to the merits of perineal prostatectomy. More men should be doing perineal prostatectomy for the male perineum is the surgical domain of the urologist.

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THE USE OF OXYTOCIC DRUGS DURING THE PUERPERIUM

A. E. KANTER, M.D., F.A.C.S.,
R. K. HAUSMANN, M.D.,
AND
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The study was undertaken in order that we might compare the value of various methods of treatment of post-partum patients. As a rule, we are prone to have routine post-partum or post operative orders which soon become standing orders that the attending physician tends to accept automatically. Thus, fluid extract of ergot, the old standby of obstetricians, has been used as routine medication for such a long time that we are likely to use this drug without question and without further examination into its efficiency.

Recently, one of our colleagues feeling that no routine post-partum medication was necessary to induce or aid in uterine involution, conducted his obstetrical service along this line. On examining patients carried along on such management we had the impression that their uteri did not involute as well as did those of women who had received routine treatment with fluid extract of ergot. At about the same time we were invited to test the efficiency of an oxytocic drug composed of ergotamine tartrate 0.25 mg. in combination with ergonovine tartrate 0.125 mg.* This study covers our observations on 150 consecutive patients delivered on the house obstetrical service of the Presbyterian Hospital of Chicago. Fifty of these patients had no post-partum medication unless an actual moribidity arose. Fifty of them had the old routine treatment with 1 cc. of obstetrical pituitary extract injected intramuscularly immediately after the completion of the third stage of labor followed by the use of 1 dram of fluid extract of ergot by mouth three times daily for five days. The third group of 50 patients received an ampule of the ergotamine-ergonovine combination intramuscularly at the conclusion of the third stage of labor followed by the use of one tablet of this preparation three times daily for three days:

Following the usually accepted standard for maternal morbidity (100.4°F. on any two successive days not including the first day) we checked the rceords of the 150 patients in this series. Morbidity occurred in five of the patients in the group that had no medication, in six of those treated with fluid extract of ergot and in none of the women who received the ergotamine-ergonovine combination. Figures such as these may be misleading if all factors such as length of labor, type of delivery and possibility of extra-genital infection are not considered. In order to clear up these points let us review the cases in which we had morbidity. In the group that had no routine medication, morbidity arose in patients who had labors of 88½ hours, 30 hours, 23 hours, 11 hours and 9 hours. Of these only the patient with the 30 hour labor had a forceps delivery. Morbidity in the ergot treated patients followed labors of 42 hours, 23 hours, 10 hours, 6 hours, 3½ hours and 2½ hours, the patient with the 23 hour labor having been the sole subject of operative delivery. Contrasted with this, we find that in the group treated with the ergotamine-ergonovine combination with no morbidities there were labors of 60 hours, 46 hours, 42 hours, 34 hours, 29 hours and 22 hours. Two of these patients were delivered by forceps. There were no patients in the entire series with morbidities due to extra-genital infections.

A study of the duration of morbidity would be confusing since all patients who developed a well established infection were immediately placed under ergotamine-ergonovine management. With this treatment all patients returned to normal readily. This is borne out when we see that only one of the 11 patients with morbidity was forced to remain in the hospital longer than the prescribed 10 days.

During the course of this study it was our clinical impression, a feeling that was borne out by the maternity floor nurses, that patients who received the ergotamine-ergonovine medication had a more rapid uterine involution and their uteri were much firmer during the entire post-partum period than were those of patients in the other groups. This was verified by daily measurement of the uterine heights. Ideally, the uterus should be at or below the level of the symphysis pubis by the tenth day post-partum.

*Neo-Gynergen. This drug was supplied through the courtesy of the Sandoz Company.

From the Department of Obstetrics and Gynecology The Presbyterian Hospital of Chicago and Rush Medical College of the University of Chicago.

Our figures on the average uterine height above the symphysis pubis on the 9th and 10th days of the puerperium will bear out the impressions stated above.

Non-medicated group of patients:
9th day — 6.5 cm.
10th day — 5.8 cm.

Ergot treated group of patients:
9th day — 4.9 cm.
10th day — 5 cm.

Ergonovine-ergotamine treated group:
9th day — 4.3 cm.
10th day — 0.74 cm.

Discussion: In a series of 150 consecutive obstetrical patients delivered on the house service at the Presbyterian Hospital, there was maternal morbidity in 11 cases. This morbidity occurred in patients who received no postpartum medication designed to aid in uterine involution or in those who were placed on fluid extract of ergot. Of the fifty patients treated routinely with a combination of ergotamine-ergonovine, none had morbidity. Realizing that this is a small number of cases from which to draw any dogmatic conclusions we feel that it suffices to allow us to make a few recommendations based upon the findings correlated with our clinical impressions.

It is obvious, from our review of these patients, that the average patient will go through the puerperal period without receiving routine treatment with an oxytocic drug. Due to unknown or undetected causes, a certain number of puerperal women will develop fever of pelvic origin which, if promptly treated, has no telling effect on the patients. Yet, one never can be certain that these minor morbidities will not lead to true puerperal sepsis. Because of this, it is probably better to use some oxytocic drug as a routine postpartum measure when by such a procedure we can practically eliminate the appearance of maternal pelvic infection.

The choice of drug that may be used is largely a matter of individual likes and dislikes. After having completed this study, we feel that a preparation such as the ergotamine-ergonovine combination used here has some advantages over the treatment with fluid extract of ergot. First, we have showed that morbidity is more satisfactorily reduced and normal involution favored by using the drug combination here tested. Second, such a regimen eliminates the use of the posterior pituitary extracts which are never injected without some fear of foreign protein reaction and the danger of an acute rise in blood pressure due to the pressor effect of this preparation. Finally, in the ergotamine-ergonovine preparation we have a drug which is stable, does not vary in potency and which gives the quick effect of ergonovine followed by the more prolonged tonic action of ergotamine. The ampule solution is painless and nonirritant on intramuscular injection while the tablets for oral use are devoid of taste and odor, all of which makes this preparation decidedly more advantageous that ergot fluid extract.

CONCLUSIONS

1. Maternal morbidity can be reduced by the routine use of a combination of ergotamine and ergonovine.

2. This same preparation induced involution of the puerperal uterus in a more satisfactory manner than does fluid extract of ergot.

3. This new drug is of standard potency and stability.

4. The ampule solution causes no pain on injection, and is free from the pressor effects of pituitary as well as the possibility of allergic reactions. The tablet dosage form is devoid of the objectionable odor and taste of ergot fluid extract and, therefore, more acceptable to the patient.

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EQUINE ENCEPHALITIS IN KANSAS

Evidence that the virus of western equine encephalitis (inflammation of the tissues of the brain) causes disease in human beings in Kansas is reported in *The Journal of the American Medical Association* for December 6 by James A. Wheeler, M.D., Newton, Kan.

For his investigation he obtained specimens of blood from reported cases of encephalitis occurring in man over the state. The final results showed that 50 per cent of the patients tested showed evidence of protection of antibodies against the western equine virus.

The isolation of the western equine and St. Louis encephalitis viruses from mosquitoes, the author says, suggests the mosquito as a vector or carrier of the virus. This vector theory, he points out, is further supported by the fact that "In Kansas the incidence of poliomyelitis (infantile paralysis), encephalitis and equine encephalitis ceases abruptly with the fall frosts."

SQUINT AND AMBLYOPIA

A Plea for Their Early Treatment

HALLARD BEARD, M.D.
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The subject of squint, or strabismus, is one which has received much attention in the literature for many decades. In earlier times, much emphasis was placed upon the surgical treatment, the fitting of glasses, of course, being mentioned. Later, the important part played by properly fitted glasses was more and more emphasized, particularly as it was realized that, in many cases (the so-called "accomodative squints"), the condition entirely disappeared while the glasses were worn. The importance of a refractive correction for the straight, or fixing, eye, as well as for the weak, or squinting eye, has long been recognized by ophthalmologists. The past fifteen years have seen the development of an elaborate technic for the correction of squint and its attendant defects of sight by means of exercises — a system known as Orthoptics.

In the application of orthoptic exercises or eye-muscle training to a given case, it is hardly necessary for me to point out that a very detailed study of the case must first be made by the examiner who is specially trained in this work. The exercises, carefully and progressively graded, are performed by the child under the supervision of one of his parents, a trained technician, or the oculist himself. Their purpose is not only to correct the squint but to build up the sight of the weak eye and to develop the power of binocular vision.

Still other methods are employed as adjuncts in the treatment. An effort is made to strengthen the sight of the weak eye by "occlusion," that is, to force the patient to use only his weak eye for long periods by covering or blurring the sight of the strong eye. Covering the stronger eye by an opaque shield or patch serves this purpose but the method is ineffective if the patch is not worn practically 100% of the waking hours for a long period (3 to 12 months or longer). The occluding patch must be so adjusted the child cannot, by turning the head, "see around" it. The difficulty of fulfilling such conditions in practice will be apparent on reflection. The cosmetic objections to such an appendage are likewise obvious. Atropine instilled into the eye daily, by suspending accommodation, may accomplish much the same purpose without the disfiguring patch, but is less effective and carries with it the hazard of prolonged use of a potent drug. There is further danger that a too prolonged exclusion of the "master" or fixing eye, may, in the very young patient, cause it to become the squinting eye and its fellow the master.

The effect of glasses is often very striking, squints of as much as 45° not uncommonly disappear *the instant the glasses are put on.* Unfortunately, such a happy result does not always follow the fitting of glasses alone and other means must be used to straighten the eyes. In some instances a partial straightening is secured by glasses and a muscle operation is done to bring about complete parallelism. Probably the most difficult and unsatisfactory cases from the point of view of therapy are the "alternating" squints, in which the patient, having good sight in both eyes, can use either one at will but never both at the same time.

Orthoptic exercises have undoubtedly done much to help children up to seven or eight years of age and marked improvement is noted even in older children, but the golden opportunity for cultivating useful binocular vision, for the child well along in the school grades, has passed.

The reason for the situation is inherent in a defect of medical education, gross, yet remediable. It hinges upon the fact that relatively few of our doctors realize that the faculty of acute vision develops in very early life and that any obstacle to its development in infancy and early childhood results in permanent disability. Such an obstacle is strabismus, in which the sight of one eye is habitually suppressed. And while the cosmetic defect of a crossed eye may be corrected in later years, its visual weakness cannot be mended.

Peter, in his book on the Extra-Ocular Muscles states "The spontaneous cure of esotropia (convergent strabismus) is of so rare an occurrence that it should never be held out to the parents as even a remote possibility." That the associated amblyopia is an acquired weakness

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due to lack of use and not often a congenital defect is stated by this widely accepted authority in so many words.

Fuchs says in his text book: "Amblyopia through non-use arises when, since earliest childhood, an obstruction of vision has been present in one eye and has made the incidence of sharp images upon the retina impossible. . . . This same amblyopia occurs when an eye has turned since childhood. In all cases the retina, on account of defective exercise, does not attain that fineness of function which comes about in the normal eye. . ."

It is not my purpose to discuss the relative values of the various procedures mentioned above, nor to enlarge on any one of them. Indeed, the above remarks are platitudes to the average ophthalmologist. Not so to the general physician. To him, the disorders of the eye are usually a subject to be avoided or turned over to the specialist (even to the optometrist!). Confronted with the problem of a cross-eyed infant or child he is too often guilty of giving the parents some extremely bad advice. For one reason or another he may hesitate to counsel the parents to consult a specialist at once, and he temporizes. His advice is often about as follows: "Wait; maybe the child will outgrow it."

Such counsel is all too common. It is given, I am sure, not out of a desire to shirk responsibility, but rather to spare the parents trouble and expense in attending to a matter which is seemingly of little consequence and which in time may correct itself. Such a conception is, I am convinced from long experience, predominant among our medical men and women. This conviction is borne out time and again when the cross-eyed child, six or seven years old, is finally brought to the ophthalmologist. The latter finds an habitual squint, firmly established, and usually almost hopelessly weak-sighted in the squinting eye. The mother's story is that she and her husband had thought, when the child was a few months old, that there was a "cast" to one eye and had called the family doctor's attention to it. Upon being advised that the child was too young to have anything done about it, they let the matter drop, hoping the eyes would straighten themselves. I have met many parents who have put off consulting a specialist for fear he would insist upon an operation. The result of the long procrastination, however, has been costly to the child, for while his eyes may be straightened by an operation, or even by glasses alone, he has, in the majority of cases, lost the power of useful vision in one eye.

In talking with the parents of a cross-eyed child the oculist is usually careful to place emphasis upon certain facts:

1. The earliest treatment is the most effective; children older than seven years have little chance of regaining good, useful sight in the weak eye, once they have lost it thru squint. Children as young as nine months can be successfully fitted with glasses. If an operation is needed it can be done as soon as the child is old enough to undergo safely a general anesthetic (say, 18 months).

2. Squint is very commonly associated with optical defects of the eyes which give rise, in later years, to symptoms of severe eye-strain if not corrected by glasses.

3. No surgical operation will be urged, nor advised, if the eye can be straightened by other means. Indeed, it would be strongly contra-indicated.

4. The wearing of glasses by a very young child should be looked upon as a choice of two evils; to be afflicted with crossed-eyes, poor sight and eye strain or the cosmetic handicap of glasses. Most of us have witnessed some such tableau as the following: A small child wearing glasses is left sitting in its baby cab in a store while the mother goes about her shopping. Someone enters or leaves the store, passing near the child and remarks to her companion in a voice of righteous indignation: "What a crime to put glasses on a little child like that!" And, like the Boy Scout, she goes her way with the comforting feeling that she has done her good deed for the day.

The remedy for this deplorable condition lies in large measure in the hands of the general medical profession — the family doctors. They, in their turn, may well blame the medical college from which they graduated for failing to give them these essential truths regarding crossed eyes.

30 North Michigan Avenue
Chicago, Illinois

DISCUSSION

Dr. W. A. McNichols, Dixon: Dr. Beard's comprehensive paper is one which any of us would be proud to have written. He wisely omits a discussion of the method of procedure in the treatment of squint. We each have a favorite technic and each has its merits.

His recommendations meet with our unanimous approval, and we are especially fortunate that this paper is presented at the Illinois State Medical meeting. Its publication in an Illinois State Medical Journal will make it available to our medical colleagues and public health nurses. May I suggest that each of us see that a reprint of this paper is placed in the hands of our local colleagues and public health nurses. This indirect contact may be far more valuable for educational purposes than the presentation of this paper at today's session.

I would like to ask Dr. Beard if he has ever seen any bad results from the prolonged use of atropine in these cases, other than the point that he mentioned, that the fixing eye may become the squinting eye. I have never seen any irritation locally, or bad general effects, in these particular types of cases. We all know that atropine in infectious cases frequently becomes very irritating, but I have never found it true in these young children.

The speaker and the program committee are indeed to be congratulated for this presentation.

Dr. Katherine Chapman, Chicago: I certainly heartily agree with Dr. Beard about early treatment. We have a clinic at the Illinois Eye and Ear Infirmary for orthoptic training of these cases. The squint often begins at two and a half, and we see children who have already lost vision to the extent that they can scarcely get around when the good eye is covered. One can recognize that there is an amblyopia even though the child is too young for vision to be obtained on Snellen charts. The child fights against covering the good eye.

The cover of gauze is put on with adhesive tape so that he cannot get it off, and the vision usually comes up quickly and returns to normal. Whereas with the older children around the age of 15, it is almost impossible to bring the vision back to normal.

Dr. George Woodruff, Joliet: Dr. Beard mentioned that it is difficult to do anything with true alternating squint. I wish he would tell us whether they get binocular vision in alternating squint. Some authorities state that it is impossible to develop binocular vision in cases of true alternating squint.

Dr. Hallard Beard, Chicago (closing): I wish to thank Dr. McNichols for his complimentary remarks, and I want to say that if by placing reprints on this subject in the hands of school nurses and health officers it will accomplish anything in the way of improving the state of general information regarding the squint problem, I would be glad to make some effort to obtain these reprints. I do not know how that can be done except by ordering from the printer. I suppose that can be done and they can be mailed to doctors, health officers and nurses desiring them.

In reply to Dr. McNichols' question about the effect of atropine, I have not seen any bad results. I believe one may employ so weak a solution of atropine that there is little fear of causing any trouble or even a sensitization to the drug. Usually one drop of ½ per cent solution of atropine each morning is sufficient to suspend accommodation. There is some danger of bringing some atropine into the other eye as well. Even the amount carried on a finger may dilate the pupil, and both eyes may be out of commission.

I thank Dr. Chapman for her contribution on the subject of orthoptics. In answer to the question about turning the eye the other way, I would say that I can only answer the question in this way. When we find a squint which is relieved 50 per cent by means of glasses, if an operation is done which accomplishes complete parallelism of the eyes without glasses, there is then some danger of the eyes diverging when the glasses are worn. Our aim has been to correct with operation only the angular portion of the squint which remains outstanding after maximum correction has been given by glasses. In reply to Dr. Woodruff's question regarding alternating squint, I have little to say. I think alternating squints have been placed in the category of those which can never achieve true binocular vision. Some cases operated later in life, at adolescence, at their own insistance, are told that straightening can be accomplished by operation. And the ophthalmologist, against his better judgement, performs the operation, obtains parallelism of the eyes and finds the patient is worse off visually than he was before. He finds his eyes in a new position but has lost the ability to suppress the vision in one eye while he uses the other, because the image falls upon a different place in the retina. He sees double for the rest of his life of for some years, and must take other means of relieving himself of this defect of double vision.

ANOTHER FIFTH COLUMN

During the World War, venereal disease in the Army caused the loss of 7,000,000 days — equal to a full year's absence from duty for 19,000 men, Surgeon General Thomas Parran points out. Infections among military personnel originate in the civilian communities. Recent experience indicates that the venereal disease rate in a given military command reflects the efficiency of the venereal disease control program in adjacent communities. The same is true for industrial defense concentrations.—*U. S. Public Health Service Bulletin.*

THE TREATMENT OF EXTENSIVE BURNS

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The management and treatment of burns has always constituted one of the major problems confronting the physician. We distinguish between burns on the basis of the presence or absence of infection, rather than the relative term degree used to imply depth. The various classifications in relation to the depth of injured tissue are well known. These are of value. However, in this discussion, we are interested primarily, in the treatment of a clean burn as opposed to an infected one.

It has been our policy to treat all burns as clean burns if it is at all possible. Burns of more than ten to twelve hours duration usually have become contaminated. Within twenty-four to forty-eight hours there may be evidence of cellulitis, lymphangitis or suppuration.

We feel that a burn is an open wound, and therefore our policy has been to follow and re-emphasize the teachings of Koch,[1] that an open wound must be cleaned; that the necrotic and devitalized tissue be completely removed; and then, it be converted into a closed wound. Sterile dressings must be applied; and lastly, the involved parts splinted to insure proper immobilization of the injured tissues.

Clean Burns, and Those up to Eight or Ten Hours Duration. The initial treatment administered to the burned patient is morphine and external heat. This is especially true if the patient is in shock. The method we have found practical is described as follows: During the interval allowed for the morphine to become effective, a room is rapidly heated to 80-85°F., and a bath tub is cleaned with soap and steaming hot water. The tub is allowed to stand full of hot water for ten minutes while instruments, basins, sheets, towels, cotton and white soap solution are assembled. The tub is then emptied and refilled two-thirds full of water at 98-100°F. To this water we add two cups of bicarbonate of soda.

The clothing is carefully removed from the patient so as not to produce further shock, and he is placed in the tub supported in a comfortable position by an assistant.

The doctor puts on his cap, mask and gloves and cleanses the non-burned areas with soft cotton saturated with white soap solution, care being taken not to break any of the blebs.

Following this, the tub is emptied and the patient is lifted onto a table covered with sterile sheets. The doctor proceeds to wash the burned areas gently with cotton and soap solution, and then irrigates the wound with sterile water.

A careful and complete debridment is performed, removing all blebs and devitalized tissue. The area is flushed with sterile water and allowed to dry.

From this point, the treatment may vary, but the essential principle of therapy is to convert this wound into a closed wound and prevent infection. This may be accomplished by various methods i.e., a non-adherent dressing, a tannic acid eschar, a paraffin cast, or other acceptable procedures.

The Non-Adherent Dressing. The application of a smooth dressing of fine meshed xeroform* or fine meshed vaseline is recommended. Fine meshed gauze is used preferably because of less likeliness of the epithelializing and granulating tissue becoming entangled in the mesh. The gauze is prepared in strips some three inches wide and twelve inches long. The amount of xeroform or vaseline used to saturate the mesh is minimal, and only enough used to allow non-adherency to the wound.

This dressing is covered with gauze and pads, and the parts are bandaged securely with muslin and with the aid of soft, moist marine sea sponges.

Lastly, the extremities are immobilized by means of light well-padded wooden splints. If it is necessary, intravenous dextrose and saline solutions may be started and a plasma infusion administered.

These dressings are not changed until the twelfth or fourteenth day, but they are reinforced on the first and second days. Only in cases of spreading infection as evidenced by continued high temperature, rapid pulse, drainage, adenopathy and pain should the wound be disturbed. In such instances, the dressings must be changed, the wound cleaned and debrided,

*Xeroform dressing — 3% xeroform (Tri-brom-phenol bismuth) in 97% yellow petrolatum.

and a Dakins solution and saline dressing or warm boric dressing applied.

As a rule, however, at the end of this twelve to fourteen day period, most of the burns are completely healed. Many which had destruction of the deeper tissues will have clean granulating surfaces, and preparations for grafting should be initiated at this time.

Tannic Acid Treatment. Davidson first used the tannic acid treatment in 1925[2]. Modifications have taken place, and as the alternative method, we advocate spraying all the burned parts with 5% tannic acid. In addition, 10% silver nitrate is applied to the areas with large cotton applicators. The patient is then placed in bed on sterile sheets, under a heat cradle, allowing air to circulate beneath. The intravenous fluids may then be started.

Tannic acid is sprayed every fifteen to thirty minutes for 16 or 18 hours until a good tan coagulum forms. During this interim, silver nitrate is applied one or two additional times.

Should vesicles form within a day or so, they are opened with sterile scissors, and the outer layer of epidermis removed. Tannic acid is re-applied to the involved parts.

If in six to eight days crusts or infection appear, the fluctuating areas should be incised or removed, and compresses of chlorinated soda or warm saline applied.

In approximately 18 to 21 days the eschar should be removed gradually, as it curls along the periphery. If granulations result, preparations for grafting should be undertaken as early as possible.

Infected Burns. These burns may be of several days duration, or they may have been previously treated ones. We consider burns of more than ten hours duration as potentially infected.

Infected burns accompanied by cellulitis are cleaned, and warm, moist compresses of saline or boric solution are applied every two hours. A heat cradle is also advisable to keep the temperature between 110° and 118°F. As the spreading infection subsides, daily dressings of Dakin solution and saline, or xeroform, are used. Burns with suppuration, debris or sloughs should be completely and meticulously debrided with sterile scissors and instruments. A fine meshed dressing of Dakin solution and saline is then applied. The affected parts are immobilized with splints and the patient put at rest.

These infected burns should be dressed daily or twice daily until clean. When granulations form, the area should be prepared for grafting. If the granulations are small and clean, a fine meshed xeroform dressing with pressure may be used until healing is complete.

General Measures. In all burns there are certain systemic reactions that must be treated. If the surface area involved is extensive or deep, there may be variable degrees of shock. In a large series of burns treated at the Cook County Hospital, it has been our observation that where a patient succumbs, death is usually the result of one of two factors: First, primary shock, from which the patient dies within six to twenty-four hours after the injury. Second, sepsis. Patients who survive the initial shock but later succumb, usually die within four to six months of a chronic sepsis and hypoproteinemia.

The shock, therefore, must be combatted first, by the administration of large adequate doses of morphine. External heat must be applied in the form of a heat cradle, blankets, and hot water bottles. Dextrose and saline should be administered intravenously. In a normal adult with extensive burns, the daily fluid requirement may be 5000 c.c. or 6000 c.c. We strongly recommend the immediate and then daily use of an infusion of 250 c.c. to 500 c.c. of blood plasma.

Later the diet should be high in vitamins and proteins. Vitamin administration in any of the available proprietary concentrates should be encouraged. Prophylactic doses of tetanus anti-toxin may be administered.

When clean granulations form, after meticulous care of deeper burns, early use of skin grafts of intermediate thickness is recommended. This converts an open wound into a closed wound and thus minimizes the infection, the loss of blood and proteins, and lastly reduces the contractures and deformities.

Gentian violet has been advocated by some surgeons with good results, but in general this treatment has not been favored by our staff.

Small burns may be successfully treated with a smooth dressing of xeroform, or some other

soothing ointment as Amertan, Tanipaste, or Butesin picrate.

SUMMARY

1. Burns are treated according to the presence or absence of infection.
2. A most important principle in the treatment of burns is conversion into a clean wound after thorough soap and water cleansing and debridment.
3. The simplest procedures which accomplish good functional results are the most desirable.
4. We advocate the use of a non-adherent fine mesh xeroform dressing in the treatment of clean burns.
5. Immediate and repeated use of blood plasma is recommended in all severe burns.
6. Surgeons must be conscious of the fact that the treatment of an extensive burn is a long time-consuming procedure, and throughout the process we adhere to the principles used in the care of any open wound; cleanliness, asepsis, early conversion into a closed wound, and immobilization.
7. Intermediate thickness grafts are recommended when grafting is necessary.

REFERENCES

1. Sumner Koch — Personal Communication.
2. E. C. Davidson: Tannic Acid in the treatment of burns. S.G.O., Vol. 41, 202, 1925.

THE NUMBER OF TYPHOID DEATHS IN 1940 WAS LOWEST ON RECORD

The Twenty-Ninth Annual Report, Published In Journal of A. M. A. Shows Progress Made in 78 U. S. Cities Since 1910

The number of deaths from typhoid in 1940 in seventy-eight cities for which data have been available since 1910 was the lowest on record, it is revealed in the Twenty-Ninth Annual Report of Typhoid in the Large Cities of the United States, published in The Journal of the American Medical Association for January 17. In the seventy-eight cities for which these data have been available since 1910, there were one hundred and seventy-two deaths in 1940 as compared with two hundred and thirty-two in 1939 and two hundred and fifty-seven in 1938. For the ninety-three cities included in the survey for the five years 1936-1940, the number of cities with no death from typhoid increased from eighteen in 1936 to forty-one in 1940. In 1940 also there were eighteen cities with no typhoid death for at least two years as opposed to fourteen such cities in 1939.

"Less impressive," the report points out, "is the fact that in 1940 there were twelve cities with rates in excess of 2.0 [per hundred thousand] while there were but ten such cities in 1939. It should be emphasized that in Trenton [one of the twelve cities] all deaths were among nonresidents, and in six of the remaining cities with rates in excess of 2.0 the records indicate that one third or more of the deaths were among nonresidents. Nine cities in the first rank [0.1 to 1.9 deaths per hundred thousand], Boston, Columbus, Akron, Oakland, Atlanta, Salt Lake City, Albany, Evansville, Syracuse, would appear (in addition to Trenton) in the honor roll [no typhoid death] were they not charged with deaths in nonresidents. . . . The rate for all cities is now just about one half of 1.0 per hundred thousand of population. No outbreaks have been recorded. Preventive measures have been the same as reported for previous years."

In regard to the manner in which the figures used in the summary were obtained, the report says: "In anticipation of an opportunity to reassemble the number of deaths from typhoid in each of the ninety-three cities which have been included in these reports in previous years, and in order to recalculate the rates in light of the 1940 census figures, each health officer was requested to furnish the number of deaths from typhoid, both among residents and among nonresidents for each of the last eleven years, 1930 to 1940 inclusive. This procedure demonstrated how difficult is the task of obtaining for such summary figures which are altogether comparable with those secured for previous years. Many clerical errors were evident which required much correspondence and, for some cities, the rechecking of local records and original certificates. . . . It has been our expressed intent to include all typhoid deaths, both resident and nonresident, but in spite of this declaration some health officers have entirely omitted nonresident deaths

for allocations made within the state. Common denominators for purposes of comparison cannot be obtained in this way."

Comparing the deaths as reported by each of *the geographic divisions of the country*, the report says:

"Ten New England cities (Cambridge, Fall River, Hartford, Lowell, Lynn, New Bedford, New Haven, Springfield, Waterbury, Worcester) *report no death from typhoid in 1940. . . . Of* eighteen cities among the ninety-three in the *United States recording no deaths from typhoid* during the past two years, nine, or one half of the total, are in the New England group. The New England cities as a whole (population 2,579,152) have lost first place among the grouped cities [with 0.35 deaths per hundred thousand]. The group of Middle Atlantic cities has moved *from second to first place, the group of Mountain* and Pacific cities occupies second place for 1940 *and the New England and East North Central* cities tie for third place. For the quinquennial average (1936-1940) the New England group continues to hold first place. . . .

"The first place Middle Atlantic cities have *a group rate (0.27) which is lower than that of* 1939 (0.37) and 1938 (0.44). Nine cities (Buffalo, Camden, Erie, Newark, Reading, Rochester, Scranton, Utica, Yonkers) report no typhoid death in 1940. . . .

"For the nine cities of the South Atlantic states which have been included in previous reviews, the local health officers now report one hundred and eighty-two deaths . . . for the five years 1936-1940. The rate (0.73) is significant*ly lower than that of 1939 (0.93). . . . Four of* the ten cities (Charlotte, Jacksonville, Tampa, Wilmington) record no death in 1940. . . .

"For the eighteen cities [included in the East North Central group, population 9,386,378] the health officers report two hundred and forty-five deaths for the five year period 1936-1940. . . . The rate for 1940 (0.35) is lower than that of 1939 (0.48) and equal to the rate for the New England cities. There are seven cities (Canton, Fort Wayne, Grand Rapids, Milwaukee, Peoria, South Ben, Youngstown) which report no death in 1940. . . .

"The six cities in the East South Central group (population 1,286,747) show a decrease in the death rate (2.09 in 1940; 2.58 in 1939). The health officers now record one hundred and sixty-one deaths for the quinquennium 1936-1940. . . .

"The West North Central group (population *2,716,484) shows a decrease in the death* rate from 0.52 in 1939 to 0.41 in 1940. . . . The rate for the nine cities (0.41) approximates that (0.35) for the New England and the East North Central groups. Four cities (Des Moines, Duluth, St. Paul, Wichita) record no death in 1940. . . .

"The cities in the West South Central group (population 2,048,692) report a very significant *reduction in the typhoid rate (3.35 in 1939,* 2.00 in 1940). The number of reported deaths dropped from sixty-eight in 1939 to forty-one in 1940. . . . Tulsa records no death in 1940. . . .

"For the eleven cities [included in the Mountain and Pacific group, population 4,186,039] the health officers report one hundred and twen*ty-three deaths for the five year period 1936-*1940. . . . The rate for 1940 (0.30) is lower than *that of 1939 (0.48). The group of Mountain* and Pacific cities occupies second place for 1940. . . . In 1940 five cities (Denver, Portland, San Diego, Seattle, Spokane) among the original eleven record no death."

THE SPECIALIST

The late Dr. A. J. Ochsner, of Chicago, distinguished for his clarity of thought and sound appreciation of values, used to say that if a general practitioner knew three things about a disease condition that were really true and important, he probably would be a good diagnostician; he might still be good if he knew five things and was an exceptional man, but if he knew too many things, he was likely to become lost in the fog of the minutiae.

And the specialist, as most of you gentlemen will become, must realize that it is a good thing for him to know something about many things. If he can know much about his particular subject, and in addition be sufficiently well versed in general knowledge, he will not find himself embarrassed as many are today by seeing the patient only through the eyes of his specialty and missing something of vital importance to the patient. It is specialists of this superior type that we hope you fellowshipmen will become.—*Wm. J. Mayo, M.D., Proceedings of the Staff Meetings of the Mayo Clinic, August* 6, 1941.

In every mental institution tuberculosis is a problem of first order. Of the deaths from tuberculosis in the United States, 5.2% occur in mental hospitals while only 15.9% are in tuberculosis hospitals. M. Pollak, M.D., et al, Amer. Rev. of Tuber. Mar., 1941.

Clinicopathologic Conferences

J. J. Moore, M.D., Department Editor.

PRESENTATION OF CASES BY

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CASE 1 — CARDIAC AND PULMONARY INFARCTION

Dr. Anton Vlcek: Patient entered hospital with a history of pain in left chest, cough and expectoration for past two weeks. He stated that he had a pleurisy for the last two weeks which has become worse lately. Expectoration is a thick mucus type with no sign of blood. Other complaints were: loss of appetite, some loss of weight, dyspnea and cyanosis. The remainder of the history was essentially negative.

Physical Examination: A well-developed, well-nourished, white male, 44 years of age, in obvious respiratory distress, cyanotic and complaining of pain in his left chest. Chest examination revealed respiratory expansion decreased on left side, lower left chest dull, moist rales in left lower chest and in right upper chest and vocal fremitus decreased on left side. Abdominal examination was negative.

Laboratory Findings: Wasserman, negative; urine, negative; White Blood Count, 13,300; Red Blood Count, 4,600,000; sputum, negative for T B and pneumonia.

Course: Patient entered hospital on June 14, 1941 with much respiratory difficulty but normal temperature with fast pulse and respirations. During the next few days patient became much worse and thoracentesis gave 130 cc. of bloody serous fluid. His condition became rapidly worse and he expired two days after entrance.

X-ray film of the chest, taken at the bedside, revealed no thoracic deformities or anomalies. The left pulmonary field disclosed a rather extensive uniform mass density occupying the entire lower lobe of the lung. The character of the lesion is both pleural and pulmonary. Further qualifications could not be made and follow-up films were suggested.

Dr. Victor Levine: These first three cases are shown at this time because they seem to fit together as a group of cases in which there are complications of cardiac conditions.

At autopsy on this first case, the left pleural cavity was found to contain a 1000 cc. of a cloudy, brown, thin fluid which was slightly blood-tinged. The right side had 500 cc. of a similar fluid. The heart weighed 450 gms.

The heart shows the following findings: In the apices of both ventricles there were blood clots, more marked in the left ventricle. There is also some in the auricular appendage which does not show the way this heart is placed. Along the ventricular wall there is a large blood clot. The inter-ventricular septum has a very marked substitution of muscle by irregular fibrous bands. This change extends thruout the muscle which corresponds to the blood clot in the left ventricle. Near the surface of the right ventricle there are soft brown necrotic areas between the bands of fibrosis. On the anterior wall of the right ventricle there is an area thinned to 2 mm. and is mainly replaced by scar tissue. The coronary arteries showed only a slight atheromatosis. At one point the right coronary is markedly narrowed but not occluded.

These are the lungs. On the left side there is seen a large infarct which occupies most of

the left lower lobe and the surface is covered by a little light gray fibrin. It is often impossible to tell what these consolidations are before they are cut, but after cutting it is possible to see that this is a very large infarct. In a branch of the pulmonary artery there is a large embolus. In the right lung there is a smaller infarct.

Anatomic Diagnosis: Eccentric hypertrophy of tht heart; old and recent infarction of the interventricular septum; mural thrombus in the apex of the left ventricle overlying the infarct; old infarction of the anterior wall of the right ventricle; mural thrombi in the right apex and auricular appendage of the heart; emboli to the branches of both pulmonary arteries with large recent hemorrhagic infarctions in the left lower and right middle pulmonary lobes; focal narrowing of the right main coronary artery; marked blood-tinged hydrothorax of both sides.

DISCUSSION

This case fits in to some extent with the clinical findings of pain in the chest and respiratory difficulty which was so great from these infarcts that it was considered a possible pneumonia. The pain could be produced by these infarcts. But I can not say where the old infarct of the heart came from. Sometimes the occlusions are in very fine vessels and I am unable to open them with the scissors. The coronary arteries were not sclerotic and if you will look at the infarct in the heart, it is seen to be somewhat spotty as though it was produced by a number of small occlusions.

Because of the spotty appearance of the fibrosis, it is possible that the original cardiac necrosis was caused by functional changes. It is well known in hypertension that there is an increased amount of spasm especially in the arterioles. In fact it is a common finding in cases of hypertension to find scattered small areas of fibrosis thruout the heart although in many cases these areas of fibrosis are so small that they can only be detected microscopically. In other cases these scattered small areas can be seen with the naked eye and in some cases to become very marked and rather localized as seen in our case here. If this is the cause of the infarction and necrosis of the myocardium here, then there is no organic occlusion of the coronary artery or its branches.

It is a well-known fact that functional spasm of the coronary tree can produce considerable cardiac pathology. There was a case reported some years ago in the Centrablatt für allgemeine Pathologie in which a woman about 70 came to visit a hospital in Berlin one morning, was told her husband had died during the night and fell over dead. The shock of learning of her husband's death was enough to produce a rupture of her left ventricle. At autopsy there was a marked necrosis with rupture of the ventricle but no occlusion of the coronary artery or its branches. This was explained entirely on a functional basis. Not very long ago I happened to be talking to a doctor in town here about the case of this woman in Berlin and he said, "Yes, I know about that case. I was working at that hospital at the time and happened to be present when the woman dropped dead."

Thus you see that a tremendous amount of change in the heart can be produced on a so-called functional basis. Of course the pulmonary infarcts here are due to emboli.

Question: What was the duration of this case?

Dr. V. Levine: Symptoms were of about two weeks duration.

Question: Do you believe that it was an embolic affair two weeks ago?

Dr. V. Levine: I think the emboli occurred in the last few days but the affair in the heart was older. He was ill for about two weeks and I am inclined to think that the original pain was cardiac. Apparently this condition was older than two weeks judging from the amount of myocardial fibrosis. I will admit, however, that the pain may not have been cardiac since the infarction of the heart was only in the septum and did not involve the surface of the heart. The pulmonary infarcts with their overlying pleurisy may have caused some of the pain, altho the chances are that fluid was already present in the pleural cavity at the time of infarction; this would prevent pleural friction and presumably also pain.

Question: Are spasms ordinarily associated with normal or low blood pressure?

Dr. V. Levine: There is a certain amount of spasm of the vascular tree present in everybody all the time. This is almost axiomatic since not all the capillaries and arterioles carry blood at one time but some close and others open alternately. Apparently all that happens in the hypertensive case is that the amount of the spasm is intensified and may produce definite organic changes.

Dr. M. P. Orloff: There were no other findings at all at any time. When I saw the patient at home, he seemed to have a pleurisy and I think his pain was all pleuritic. He did poorly, however, and was brought in to the hospital where his physical and x-ray findings seemed to point to a pneumonia and pleurisy.

Question: Is it not true that you get a hemolytic icterus following a pulmonary infarct?

Dr. V. Levine: Yes, that is true.

Question: You will also get the icterus index to rise in a pneumonia patient. Was there any blood found in the sputum?

Dr. V. Levine: It is also possible for the icterus index to rise in a pneumonia patient. Therefore it could not have been used here to distinguish between infarction and pneumonia. The usual medium-sized pulmonary infarcts will produce blood in sputum. I can't explain why this case did not.

CASE 2 — MULTIPLE EMBOLISM

Dr. L. Weisskopf: This patient was a 64 year old white woman. She was first admitted with complaints of gastric upset of 1 to 2 days duration and shortness of breath of an unknown duration. She had been in good health until the last few years when she became nervous following family difficulties. On examination she appeared undernourished. The thyroid gland was enlarged and nodular. There was a heart irregularity with a pulse deficit. She had pain in the upper abdomen; the abdomen was distended with fluid. There was some pitting edema of the lower extremities.

The diagnosis was organic heart disease with auricular fibrillation and marked decompensation.

An electrocardiogram showed myocardial damage, auricular fibrillation and a pattern compatible with advanced arteriosclerotic heart disease.

While in the hospital she complained of some backache and was constipated. She was somewhat uncooperative and had occasional nausea and vomiting. She was discharged somewhat improved after 4 weeks.

Four weeks later while at home she arose early one morning to go to the bathroom. Following this she was seized with sudden severe excruciating pain in her right leg which became cold and cyanotic in its lower half. Four hours later I saw her at home and considered the diagnosis of embolus to an artery most likely because of the history of auricular fibrillation, the sudden onset and the physical findings. She was taken into the hospital two hours later where conservative treatment was decided upon because of her poor condition. Consultation confirmed the diagnosis and an injection of the 2d, 3rd, and 4th right lumbar sympathetic ganglia with novocaine and eucupine was performed.

She improved somewhat, although gangrene of the foot began to develop; six days after the sudden onset of the pain, the right lower extremity was amputated thru the lower third of the thigh. Examination of the amputated leg disclosed an embolus occluding the popliteal artery at the level of the knee. At first she improved but soon she went downhill, the stump became gangrenous and markedly swollen and crepitant. She died 17 days after the amputation and about 2½ months after her first admission. In the last few days she had pain in the left upper quadrant.

Dr. V. Levine: At autopsy this patient was still fairly well nourished. She was icteric and the right lower extremity was amputated in the lower third of the thigh. The tip of the stump was black and the incision was gaping.

The heart weighed 430 gms. The myocardium was softened. The chambers were dilated. In the left auricular appendage there were a number of adherent blood clots. The mitral valve had a moderate fibroplastic deformity so that only two fingers could be passed thru the valve.

The spleen was adherent to the stomach, the tail of the pancreas and the diaphragm. It appeared to be quite fluctuant and much fluid escaped on incision. Here is the splenic artery; 8 cm. from its origin its lumen is occluded by a purple and purple-gray, non-adherent blood clot. The splenic vein was free from obstruction. This is a large, softened infarct of the spleen.

The common iliac, external iliac and femoral arteries, as you can see, are occluded by a blood clot. You can see that the wall of the popliteal artery from the surgical specimen is smooth and near one end there is a definite embolus.

Anatomic Diagnosis: Moderate fibroplastic deformity of the mitral valve with moderate stenosis; eccentric hypertrophy of the heart; mural thrombi in the left auricular appendage; emboli to the popliteal artery and splenic artery produced respectively the gangrene of the right lower extremity, and the infarction of the spleen.

DISCUSSION

The autopsy and the surgical specimen verifies the clinical findings; the surgical specimen reveals the embolus to the popliteal artery and the autopsy discloses the embolus to the splenic artery. The presence of these thrombi in the auricular appendage is just an anatomic indication of cardiac decompensation. They were formed in the heart and later thrown out as an emboli.

As to the surgical specimen, in most of the amputated legs with gangrene there is a sclerosis of the popliteal vessels, but in this case the popliteal artery was somewhat smooth. I was somewhat disappointed on seeing this and had visions of being unable to explain the gangrene. On opening the artery down to the popliteal space, however, the embolus, which is only 2 cm. long, was found.

CASE 3 — ACUTE ENDOCARDITIS ENGRAFTED ON AN OLD DEFORMITY

Dr. L. Weisskopf: This patient was a 58-year old man, had not been feeling well for about 8 months and had lost about 40 lbs., although he still weighed 179 lbs. on entrance. His main complaints had been weakness, paroxysmal, nocturnal dyspnea, orthopnea and insomnia. These complaints really dated back 8 years with a gradual onset. He was apparently compensated, however, until 5 months ago.

Physical Examination: His B/P was 140/80; T 97; P 72 and R 28. His heart was markedly enlarged and irregular with the suggestion of a murmur at the apex. He was somewhat cyanotic and had a slight edema of the legs. He was still so obese that the question of abdominal fluid could not be determined.

Diagnosis: Organic heart disease with decompensation.

An electrocardiogram disclosed major myocardial damage and auricular fibrillation. He continued to be poor in the hospital, went gradually downhill and died rather suddenly 9 days after entrance.

Dr. V. Levine: At autopsy this patient was still quite obese. The abdominal cavity contained about 1000 cc. of a clear fluid.

The heart weighed a mere 720 gms. The aortic valve had a very marked fibroplastic deformity and on top of this old change there are a number of recent acute vegetations which vary from 2 to 3 mm. in diameter. The coronary arteries are markedly calcified. Nothing else of real interest was found. The liver and spleen exhibit passive congestion.

Anatomic Diagnosis: Early malignant endocarditis engrafted on old fibroplastic deformity of the aortic valve; marked eccentric hypertrophy of the heart; moderate sclerosis of the aorta and coronary arteries; chronic passive congestion of the liver and spleen; ascites.

Question: What was his temperature?

Dr. V. Levine: His temperature was always subnormal. In the subacute form of endocarditis fever is often absent or insignificant at first.

Dr. M. A. Weiskopf: This man was a patient of mine for about 40 years. About 35 years ago he contracted syphilis and was one of the early patients treated with 606. He had to be taken in to the hospital to be given the injections. This was before the time of Wasserman tests so that we do not know what his Wasserman was originally. In his last illness the Wasserman was negative and it is very interesting to note that there were no signs of syphilis at the autopsy.

CASE 4 — CARCINOMA OF THE STOMACH

Dr. Anton Vlcek: Patient entered the hospital on August 2, 1941 with complaints of being unable to retain any food for the past week. She also complained of a loss of appetite, loss of weight and a feeling of weakness. Remainder of history was essentially negative.

Physical Examination revealed a fairly well-nourished white female, 70 years of age, acutely ill, rather restless and complaining of some pain in epigastric region. Temperature, 101; Pulse, 100; Respiration, 26. Chest examination showed a murmur over the mitral area. Blood Pressure, 150/80. The abdomen was distended. There was a dullness over the epigastric region and a large palpable mass was present in the epigastric area. There was marked edema of both lower extremities.

Laboratory Findings: On 8/3/41 Hemoglobin 77%; R B C 4,460,000. On 8/21/41 Hemoglobin 84%; R B C 4,480,000; Urine and Wasserman were negative.

Course: When patient entered she was confused, had weak pulse and temperature of 101; pulse 100. However, she soon felt better, temperature became normal and patient even got out of bed and sat and walked around. Treatment was chiefly Sippy diet and fluids. Then about one month later she began to have emesis; refused to take here feeding, became markedly restless and noisy and temperature began to rise. She began to require a sedative and slowly failed until on the day before death she went into a coma and never recovered. She died 43 days after entrance, with the diagnosis of carcinoma of the stomach.

Dr. V. Levine: At autopsy this patient was still fairly well nourished. On opening the abdomen the entire epigastrium and lesser peritoneal cavity was filled with a firm mass adhering to the spleen, transverse colon and posterior abdominal wall. On dissecting out this mass it was seen to center around the stomach; the large cancer is somewhat fungating and infiltrates the entire wall of the stomach and the pancreas; it has become attached to the spleen.

The heart weighed 400 gms. The kidneys show a degree of benign nephrosclerosis, expected in a woman of 70.

A section of the stomach under the microscope discloses a tumor of the so-called medullary type with large sheets of rather immature cells with very scattered stroma.

Anatomic Diagnosis: Ulcerated, fungating, medullary carcinoma of the stomach; adhesions to the spleen, pancreas, omentum, transverse colon and the posterior abdominal wall due to infiltration of carcinoma; congestion of the right lung; advanced sclerosis and calcification of the abdominal aorta; eccentric hypertrophy of the heart.

DISCUSSION

No distant metastases were found. The case is interesting because of the large size of the primary tumor and adjacent infiltration, with no distant metastases. This is the type of case which has a good prognosis with early diagnosis and operative removal.

SCALENUS ANTICUS SYNDROME (BRACHIAL NEURITIS)

(Exum Walker, Atlanta, in *Jour. Med. Assoc. of Ga.*, Aug.)

The scalenus anticus syndrome occurs with frequency, but often it is not recognized. It is the commonest form of brachial neuritis, the symptoms of which can be promptly relieved.

The symptoms result from mechanical irritation of the brachial plexus as it passes over the first rib, between the scalene muscles. Contributing factors are movements of the upper extremity, and local anatomic and postural relationships affecting the brachial plexus.

If, in any part of the distribution of the brachial plexus, there is pain which is aggravated by using the arm in certain positions, and tenderness is present over the supraclavicular region, the scalenus anticus syndrome is the most likely diagnosis.

Compression of nerve roots by the herniation of a cervical intervertebral disc, or by arthritis of the cervical spine, produces a very similar clinical picture, and must be differentiated. Other conditions to be considered are spinal cord tumor, syringomyelia, Raynaud's disease, subacromial bursitis, and tumor of the brachial plexus.

Surgical section of the scalenus anticus muscle results in prompt relief of pain. This can be accomplished through a small incision, and requires hospitalization for only three or four days.

FEAR, RAGE AFFECT VISION, NEW EXPERIMENTS REVEAL

Science confirms your idea that rage or fear can "blind" you. Experiments by Dr. E. I. Strongin, Mrs. N. Bull, and Dr. B. Korchin of the College of Physicians and Surgeons, Columbia University, show that vision is not the same when you are under emotional strain as it is when you are relaxed.

Motion pictures taken of the eyes of persons reading showed that while 36 per cent of them could see better, when emotionally roused, another 22 per cent became worse under the strain.

More critical was the test of how the two eyes work together. This is important for the motorist who is trying to gauge the speed of an approaching car, or for the airplane pilot who is bringing his ship in for a landing. It is essential for the perception of distances and depth.

From 14 per cent to 22 per cent of those tested became worse in this binocular functioning under stress of emotion. Only 4 per cent improved under the excitement.

Men whose duties will require them to use their eyes under powerful emotional strain as in fighting or any hazardous situation, should have their vision tested under emotion, not while they are sitting calmly in the quiet of a doctor's office, these scientists recommended.

Psychologists are reminded that many of the crashes which involve army pilots occur when the flyer is returning from an exciting and fatiguing flight and tries to land his speeding plane in a small field. In this sort of situation, ability of the eyes to work together is put to severes test. — *Science News Letter.*

SERVICE

"So you complain of finding sand in your soup?"

"Yes, sir."

"Did you join the Army to serve your country, or complain about the soup?"

"To serve my country, sir — not to eat it."— *The Highway Traveler.*

News of the State

PERSONALS · COMING EVENTS · MARRIAGES · DEATHS

POST GRADUATE CONFERENCE

A very interesting program is being arranged for the doctors of the 6th Councilor District in connection with the Post-Graduate Conference to be held at Quincy, Illinois on April 23rd.

The meeting will be held at the Lincoln-Douglas Hotel, Quincy, starting promptly at 1:30 and continuing through until 5:15. The doctors of the Adams County Medical Society will entertain visiting physicians at a social hour from 5:15 to 6:00 when dinner will then be served. The evening meeting is being devoted to a discussion of the war problems facing medicine.

The program is as follows:

1:30-2:15 — "Painful Feet" — Walter R. Fischer, M. D., Instructor Orthopedic Surgery, University of Illinois College of Medicine

2:15-3:00 — "Blood Dyscrasias" — Henry George Poncher, M. D., Associate Professor of Pediatrics, University of Illinois College of Medicine

3:00-3:45 —

3:45-4:30 — Arkell M. Vaughn — "Treatment of Shock."

4:30-5:15 — Round Tables — the above speakers will meet with groups of doctors for informal discussions and questions

5:15-6:00 — Visiting physicians guest of Adams County Medical Society at a social hour

6:00 — Dinner

7:00 — War Medicine — Charles H. Phifer, M. D., President of the Illinois State Medical Society and Chairman of the 6th Corps Area for the Procurement and Assignment of Physicians

Harold M. Camp, M. D., Secretary of the Illinois State Medical Society and Chairman of Illinois for the Procurement and Assigment of Physicians

Doctor H. O. Collins, President of the Adams County Medical Society will act as Chairman. Invitations are being sent to all physicians in surrounding counties and a cordial welcome is extended.

This program is the ninth Post-Graduate Conference sponsored by the Post-Graduate Committee of the Illinois State Medical Society, Robert S. Berghoff, Chairman, in cooperation with the Councilor Districts of the State Medical Society during the winter of 1941 and the spring of 1942.

The following Auxiliaries to county medical societies of Illinois were awarded cash prizes in the Hygeia Contest conducted by the American Medical Association:

Auxiliaries with a membership of 24 to 42 — Third Prize of $15.00 was awarded to Vermilion County, Mrs. C. L. Bennett, Danville, Chairman.

Auxiliaries with a membership of 43 to 600 — 3rd Prize of $15.00 was awarded to Cook County, Mrs. Clyde R. Landis, Chicago, Chairman.

State Winner — 2nd Prize of $25.00 awarded to Illinois, Mrs. E. M. Egan, Chicago, Chairman for the state.

Honorable mention was given to Rock Island County and Sangamon County.

The Logan County Medical Society entertained the dental profession of the County at a dinner meeting on March 26th at which time Dr. L. R. Main of the St. Louis University School of Dentistry spoke on "Reflex Complications of Dental Origin."

The March issue represents the Fifteenth Annual "Radium Number" of the Mississippi Valley Medical Journal and Radiologic Review. The issue contains many original articles written by well known radium therapists, among these are Kaplan of New York University, Pohle of the University of Wisconsin, Rosh of Bellevue Hospital, New York, and Harold Swanberg of Quincy, Illinois.

Francis L. Lederer of Chicago has been invited to address the Medical Society of the State of New York in New York City on April 28th, subject "Otosurgical Deficiencies."

M. A. Perlstein addressed the Illinois Chapter of the American Physiotherapy Association in Chicago on April 1st.

The Educational Committee of the Illinois State Medical Society has made arrangements to schedule health programs for the various civic clubs of Springfield meeting during the week of the Annual Meeting. A number of radio programs are also being scheduled.

The Scientific Service Committee, Robert S. Berghoff, Chairman, is offering special programs in the field of Cancer, particularly Gastric Cancer, to all county medical societies of the state.

COMING MEETINGS

April 6 — Hancock County — Carthage — 7:30 P. M. — Program on Industrial Medicine and Surgery

April 7 — Williamson County — Herrin Hospital, Herrin — 8:00 P. M. — Program on Obstetrics

April 9 — 10th Councilor District Post-Graduate Conference, Belleville

April 10 — Jersey-Greene County — Jerseyville — William M. Hartman — "Some Things The General Practitioner Should Know About Industrial Medicine and Surgery"

April 10 — Will-Grundy — 12:00 noon, Louis Joliet Hotel, Joliet

April 14 — Bureau County — Perry Memorial Hospital, Princeton — 6:30 P. M. — Clifford J. Barborka — "Medical Management of Gall Bladder Disease"

April 14 — Effingham County — Benwood Hotel, Effinghan — 7:30 P. M. — Nathan S. Davis — "Subclinical Nutritional Deficiency"

April 14 — Tazewell County — Illinois Hotel, Pekin — 6:00 P. M. — Roswell T. Pettit — "Pulmonary Silicosis, Importance, Advantages and Limitations of X-Ray Examination"

April 14 — Kankakee County — Noon, Kankakee —

April 15 — Christian County — Taylorville — 6:00 P. M. — E. P. Coleman — "Crushing Injuries of the Chest and Abdomen"

April 16 — Jackson County — Roberts Hotel, Carbondale — 6:30 P. M. — Program on Obstetrics

April 17 — Will-Grundy County — 12:00 noon, Louis Joliet Hotel, Joliet — Robert H. Herbst — "Some of the Unusual and More Dangerous Forms of Prostatic Obstructions"

April 23 — 6th Councilor District Post Graduate Conference — Quincy, Lincoln-Douglas Hotel, starting at 1:30 P. M.

April 24 — Will-Grundy County — 12:00, Louis Joliet Hotel, Joliet — Edward L. Compere — "Treatment of Fractures"

MARRIAGES

Eugene Livingstone Vickery, Lena, Ill., to Miss Millie Margaret Cox at Sheridan, Ind., Dec. 21, 1941.

Edward Paul Sheriden, Sumner, Ill., to Miss June Russell of Harvey in January.

DEATHS

Claud R. G. Forrester, Chicago; Bennett Medical College, 1902; research work at Edinburgh University at Scotland, and was a Major in the British Army for 18 months. He was on the surgical staff of the Chicago Memorial and Edgewater Hospitals, and a life member of the American Medical Association of Vienna. He died February 27, 1942 at the age of 62.

Wallace F. Grosvenor, Chicago; Rush Medical College, 1900. Was attending obstetrician and gynecologist at Ravenswood Hospital. Died March 3, 1942 at the age of 72.

WILLIAM H. HERSH, Chicago; Harvey Medical College, 1902. Died March 6, 1942, aged 73.

JOHN J. KILLEEN, Chicago; University of Illinois College of Physicians and Surgeons, 1905; Hon. Degree L.L.D., National University of Ireland, Dublin, 1934. He was a captain in the medican corps during World War 1. He was attending consultant in diseases of the Ear, Nose and Throat to Marine Hospital No. 5, U.S.P.H.S.; laryngologist to the Chicago City Opera Company. Died March 17, 1942, aged 67.

HARRY A. PASKIND, Evanston; University of Illinois College of Medicine, 1920. Associate Professor of nervous and mental diseases, Northwestern University Medical School; attending neurologist, Evanston Hospital; member Association for Research in Nervous and Mental Diseases, Central Neuropsychiatric Association. Died of a heart attack, March 24, 1942, aged 45.

EMANUEL TAFT, Chicago; University of Illinois College of Medicine, 1931. Associate in obstetrics and gynecology, Lutheran Deaconess Hospital; Staff Mt. Sinai and Michael Reese Hospitals. Died March 1, 1942, age 34 years.

EDWARD MIERS, Des Plaines; Kentucky School of Medicine, Louisville, 1905; Staff member of St. Mary of Nazarene Hospital. Died March 14, 1942, aged 65.

SAMUEL D. HOUSTON, Polo; Chicago College of Medicine and Surgery, 1886. Died of a heart ailment in March at the age of 84.

RICHARD R. WORTHINGTON, Indianola; Medical College of Ohio, 1874. Prominent physician and druggist of Indianola for 62 years, died February 23, 1942 at the age of 90.

WILLARD THOMPSON, Dixon; Hahnemann Medical College, 1910; post-graduate work in Philadelphia and Vienna and was an eye, ear, nose and throat specialist. He was a 32nd degree Mason, a past Exalted Ruler of Dixon Elks lodge and Past Commander of Dixon Post No. 12, American Legion. Died March 1, 1942 of coronary thrombosis at the age of 59.

HARRY O. TAYLOR, Anna; National University of Arts and Sciences Medical Department, St. Louis, Missouri, 1918. Was president of the Union County Medical Society in 1941. Died February 13, 1942 at the age of 61.

GRACE ALLEN GRAVES, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; aged 67; died January 26 of chronic myocarditis.

RANNEY YALE LYMAN, Chicago; Northwestern University Medical School, Chicago, 1940; Elizabeth J. Ward fellow in radiology at his alma mater; aged 33; died, Dec. 22, 1941, at his home in Helena, Mont., of chronic hepatitis.

GEORGE BOYD DYCHE, Wheaton; Northwestern University Medical School, 1897. Died March 16, 1942, aged 69 years.

J. F. JONES, LeRoy; School of Medicine of the University of Colorado, 1894; post-graduate work in Boston and Philadelphia. Died March 16 at the age of 81.

HENRY W. SMITH, Roodhouse; University of Illinois College of Medicine, 1894. Died of a heart ailment on March 12, 1942, aged 75 years.

GEORGE A. REMINGTON, Chicago; American College of Medicine and Surgery, 1905. Died March 26, 1942 at the age of 62.

YESTERDAY, TODAY, AND TOMMOROW

There are two days in every week about which we should not worry — two days which should be kept free from fear and apprehension.

One of these days is yesterday with its mistakes and cares, its aches and pains, its faults and blunders. Yesterday has passed forever beyond our control.

All the money in the world cannot bring back yesterday. We cannot undo a single act we preformed; we cannot erase a single word we said. Yesterday is gone.

The other day we should not worry about is tomorrow with its possible adversities, its burdens, its large promise and poor performance. Tomorrow also is beyond our immediate control.

Tomorrow's sun will rise either in splendor or behind a mask of clouds — but it will rise. Until it does, we have no stake in tomorrow, for it is as yet unborn.

That leaves only one day — today. Any man can fight the battles of just one day; any woman can carry the burdens of just one day. It is only when you and I add the burdens of those two awful eternities — yesterday and tomorrow — that we break down.

It is not the experience of today that drives men mad — it is remorse or bitterness for something which happened yesterday and the dread of what tomorrow may bring. Let us, therefore, journey but one day at a time.—*L. H. P. in the Pennsylvania Med. J.*

A simple method for correction of angulation in fractures of long bones is presented. The well-known principle of "cast wedging" is used, making use of measurements taken by the roentgenologist. Only one cast application is necessary and fractures of long bones may be set accurately.— *The Journal of the Michigan State Medical Society.*

I find the great thing in this world is not so much where we stand so much as in what direction we are moving.—*Oliver Wendell Holmes.*

April, 1942

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